



PROJECT NO. Gre853235C

GREENE COUNTY

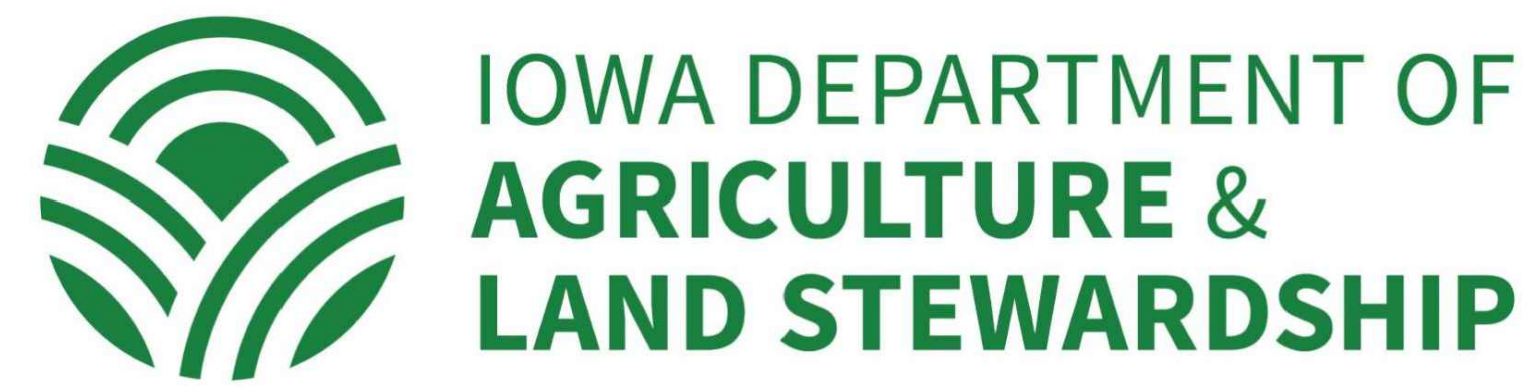
SECTION 35, TOWNSHIP 85N, RANGE 32W

IOWA

IN COOPERATION WITH

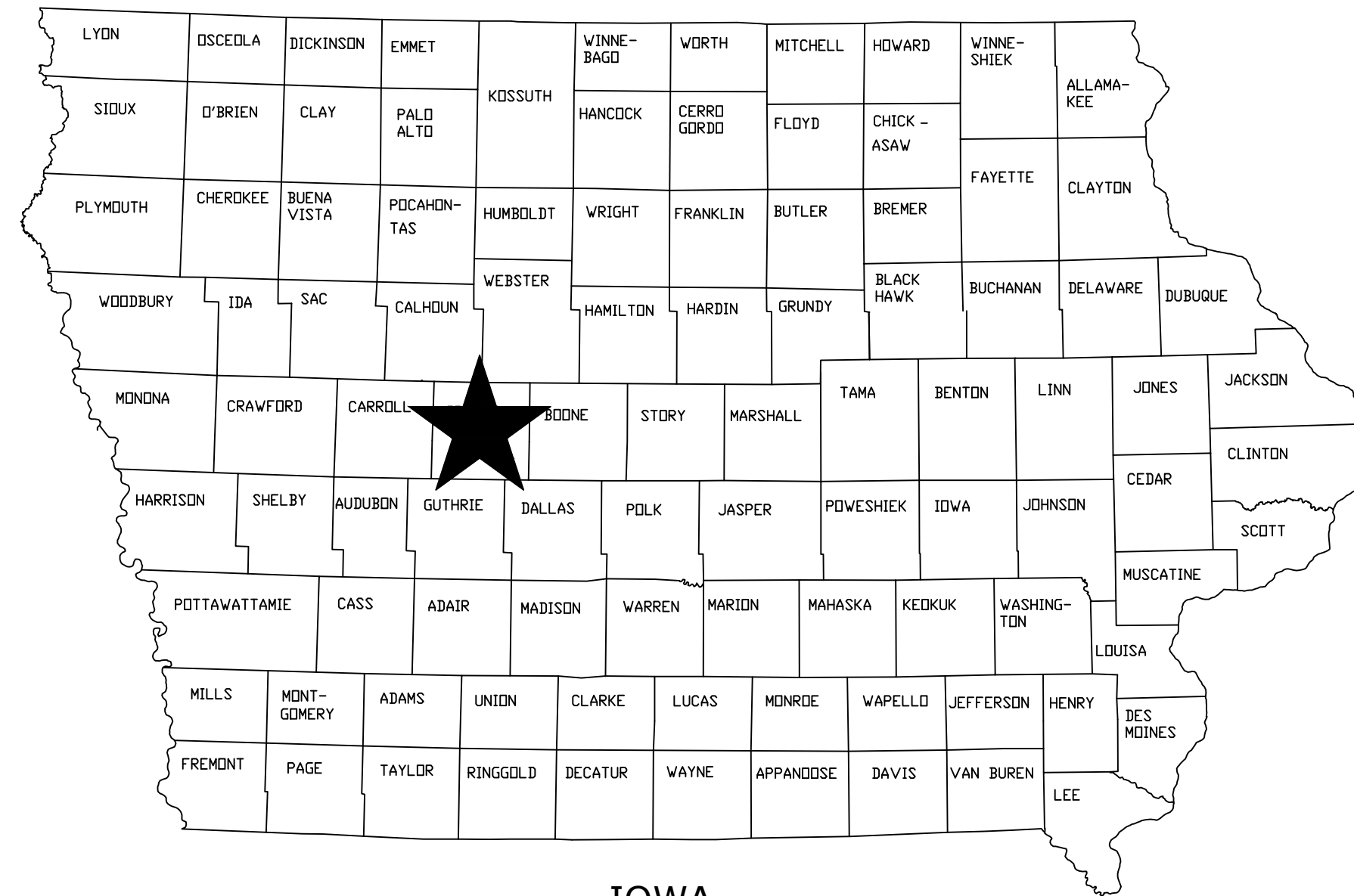
IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

IOWA ENGINEERING JOB CLASS V



GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000 www.ducks.org

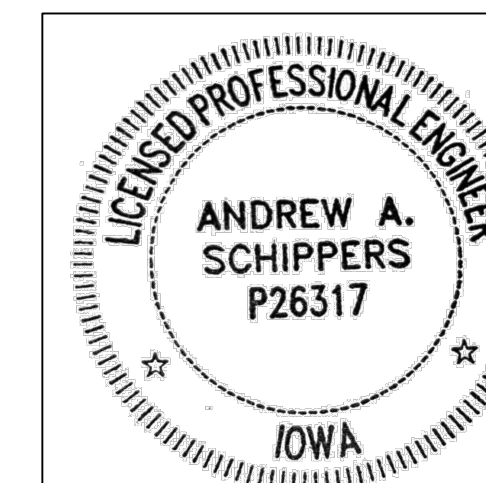
COVER SHEET
PROJECT NO. GRE853235C
GREENE COUNTY
IOWA



SHEET INDEX	
C001	COVER SHEET
C002	SPECIFICATIONS, QUANTITIES, & NOTES
C051	TOPOGRAPHY & EXISTING CONDITIONS
C101	SITE PLAN
C201	EMBANKMENT PLAN & PROFILE
C202	RIPRAP & DRAW-DOWN PLAN
C203	INLET CHANNEL #1 PLAN & PROFILE
C204	WETLAND PROFILES
C205	OVERALL TILE MODIFICATION PLAN
C206	MAIN COUNTY TILE PLAN & PROFILE
C207	MODIFIED 18-INCH COUNTY TILE PLAN & PROFILE
C301	SHEET PILE DETAILS
C302	CONSTRUCTION DETAILS
C303	WCS DETAIL SHEET 1
C304	WCS DETAIL SHEET 2
C305	FILTER DIAPHRAGM DETAILS
C401	SEEDING PLAN

SITE MAP

MAP POINT "▲" IS LOCATED AT THE INTERSECTION OF 140TH STREET AND I AVENUE IN CHURDAN, IA. FROM MAP POINT, PROCEED SOUTH ON I AVENUE APPROX. 2.0 MILES TO INTERSECTION WITH 160TH STREET. THEN, PROCEED WEST ON 160TH STREET FOR APPROX. 3.9 MILES TO THE PROJECT SITE.
LATITUDE: 42°7'25.40"
LONGITUDE: 94°33'2.47"



To the best of my professional knowledge, judgement, and belief, these plans meet applicable NRCS Standards

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Andrew Schippers, P.E.

7-14-23

Date

My license number is P26317
My license renewal date is December 31, 2023
Pages of sheets covered by this seal: 1 - 17 (C001-C401)

C:\Users\schippers\Documents\Iowa - Documents\Iowa\IA-340-5 C001 - Drawing\IA-340-5 C001 Cover Sheet & Specs.dwg, 7/14/2023 2:51 PM, Andrew Schippers, Cover Sheet, None

NOTICE: Construction site safety is the sole responsibility of the contractor. Ducks Unlimited, Inc. shall not assume any responsibility for the safety of the work performed, persons engaged in the work, nearby structures, or of other persons on-site.

This material, data and information is the property of Ducks Unlimited, Inc. It may not be used or reproduced for any purpose without the prior written consent of an authorized agent of Ducks Unlimited, Inc. Ducks Unlimited, Inc. makes no representation or warranty of any kind regarding this material, data and information, including, but not limited to, the accuracy of the material, data and information or its suitability for any purpose. All use of the material, data and information is at the users sole risk. By using any of this material, data and information, user agrees that Ducks Unlimited, Inc. is not responsible for their use of the material, data and information or the results thereof.



Revision	Sheet	Revisions	Date	By
1		IDEALS REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BEAM & SHEET PILE REVISIONS	7-14-2023	A.S.

CAD FILE:	
IA-340-5 C001	Cover Sheet & Specs
DESIGNED BY: A.S.	
DRAWN BY: A.S.	
SURVEYED BY: A.S. & R.V.	
BIOLOGIST: M.S.	
DATE:	7-14-23
PROJECT NUMBER:	US-IA-340-5
C001	

ESTIMATED QUANTITIES					
NOTE #	BID ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT
1	1	IA-1	STRIPPING	LS	1
2	2	IA-1	CROP DAMAGE	AC	10
3	3	IA-6	STRUCTURE SEEDING	AC	2
4	4	IA-6	BUFFER SEEDING	AC	20
5	5	CS-8	MOBILIZATION & DEMOBILIZATION	LS	1
6	6	IA-9	DRAINAGE TILE INVESTIGATION	LS	1
7	7	IA-13	STEEL SHEET PILING	SF	1,650
8	8	IA-21	EXCAVATION (GENERAL)	CY-P	3,310
9	9	IA-21	EXCAVATION (CLAY LINER)	CY-P	8,125
10	10	IA-23	EARTHFILL (GENERAL)	CY-P	1,230
11	11	IA-23	EARTHFILL (GENERAL DAM)	CY-P	9,705
12	12	IA-23	EARTHFILL (DAM CORE)	CY-P	2,910
13	13	IA-23	EARTHFILL (CLAY LINER)	CY-P	6,935
14	14	IA-24	DRAINFILL (SAND)	TN	100
15	15	IA-26	TOPSOIL PLACEMENT	CY-P	4,470
16	16	IA-45	TOE DRAIN (6"Ø PERFORATED CPP)	LF	520
17	17	IA-46	6"Ø HDPE DUAL-WALL	LF	428
18	18	IA-46	8"Ø HDPE DUAL-WALL	LF	852
19	19	IA-46	18"Ø HDPE DUAL-WALL	LF	1,240
20	20	IA-46	36"Ø HDPE DUAL-WALL	LF	1,920
21	21	IA-51	ALUM. CMP DRAW-DOWN STRUCTURE	EA	1
22	22	IA-51	ALUM. CMP DRAW-DOWN INLET/OUTLET	LF	105
23	23	IA-51	CMP OUTLET - 8"Ø	LF	80
24	24	IA-51	CMP OUTLET - 36"Ø	LF	20
25	25	IA-61	RIPRAP (IA DOT CLASS C)	TN	600
26	26	IA-61	RIPRAP (IA DOT CLASS E)	TN	200
27	27	IA-62	CEMENT GROUT	CY	150
28	28	SUDAS 9040 2.17	TURF REINFORCEMENT MAT, TRM (SUDAS TYPE 4)	SY	1,100
29	29	IA-51	36" ALUM. CMP RISER INLET (AT WETLAND)	EA	1
30	30	IA-51	36" ALUM. CMP RISER INLET (AT STILLING BASIN)	EA	1

CONSTRUCTION NOTES:

- BID ITEM FOR STRIPPING SHALL INCLUDE REMOVAL OF FIRST 6" OF TOPSOIL MATERIAL BELOW BERM, GRADING AREAS, AND CLAY LINER. THIS MATERIAL SHALL BE STOCKPILED ON-SITE FOR RESPREAD, WHICH IS INCLUDED IN A SEPARATE BID ITEM (SEE BID ITEM NO. 15)
- BID ITEM FOR CROP DAMAGE SHALL INCLUDE AREA OF CROPS DAMAGED, AS NECESSARY, IN ORDER TO COMPLETE THE WORK AS DETAILED. CONTRACTOR SHALL MINIMIZE CROP DAMAGE AS MUCH AS POSSIBLE DURING CONSTRUCTION ACTIVITIES.
- BID ITEM FOR STRUCTURE SEEDING SHALL CONSIST OF SEEDING, MULCHING, AND FERTILIZING ALL STRUCTURES, EMBANKMENTS, AND ALL OTHER DISTURBED AREAS (OUTSIDE OF POOL AREA), AS INDICATED ON THE DRAWINGS OR OTHERWISE DESIGNATED.
- BID ITEM FOR BUFFER SEEDING SHALL CONSIST OF SEEDING THE AREAS DESIGNATED ON THE PLANS AS BUFFER SEEDING AND INCLUDE BORROW AREAS, DISTURBED AREAS NOT SEEDDED AS PART OF STRUCTURAL SEEDING, AND OTHER AREAS WITHIN THE EASEMENT.
- BID ITEM FOR MOBILIZATION & DEMOBILIZATION SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL AND EQUIPMENT TO TRANSPORT ALL NEEDED LABOR, MATERIAL AND EQUIPMENT, TO AND FROM THE PROJECT SITE, TO SUCCESSFULLY COMPLETE THE PROJECT AS SHOWN ON THE PLANS.
- BID ITEM FOR DRAINAGE TILE INVESTIGATION SHALL CONSIST OF INVESTIGATION, LOCATION, REPAIR, REMOVAL AND/OR CAPPING/PLUGGING OF SUBSURFACE DRAINS (TILE) IN WETLAND RESTORATION AREA, ENHANCEMENT, OR CREATION PROJECT AREAS, OR OTHER SITUATIONS WHERE SUBSURFACE DRAINS MAY BE PRESENT. REFERENCE OVERALL TILE MODIFICATION PLAN. THIS BID ITEM DOES NOT INCLUDE INSTALLATION OF NEW TILE, WHICH IS INCLUDED IN SEPARATE LINE ITEMS.
- BID ITEM FOR STEEL SHEET PILING SHALL CONSIST OF FURNISHING AND DRIVING THE SPECIFIED SHEET PILING AT THE LOCATION SHOWN ON THE DRAWINGS. THIS BID ITEM SHALL INCLUDE SHEET PILING CAP AND ALL OTHER LABOR AND MATERIALS NECESSARY TO PROVIDE A COMPLETE INSTALLATION.
- BID ITEM FOR EXCAVATION (GENERAL) SHALL CONSIST OF EXCAVATION AND GRADING OF MATERIAL NEEDED FOR THE BERM CORE TRENCH, ESTABLISHING POOL FINAL GRADE (GRADING AREA), SEDIMENTATION BASINS (TWO TOTAL), AND INLET/OUTLET CHANNELS.
- BID ITEM FOR EXCAVATION (CLAY LINER) SHALL CONSIST OF OVER-EXCAVATING THE AREAS OF WETLAND AS SHOWN ON THE PLANS. THE EXCAVATION OF THE CLAY LINER IN THE WETLAND AREA SHALL EXTEND FOR A DEPTH TO ALLOW FOR 18 INCHES OF OF COMPACTED CLAY LINER COVERED BY 6 INCHES OF TOPSOIL.
- BID ITEM FOR EARTHFILL (GENERAL) SHALL CONSIST OF THE EARTHFILL NECESSARY TO CONSTRUCT THE SUBMERGED BERMS AND ADDITIONAL FILL TO BE PLACED OVER THE TILE TO PROVIDE ADEQUATE COVER. COHESIVE MATERIAL FOUND DURING GENERAL EXCAVATION AND CLAY LINER EXCAVATION CAN BE USED FOR THESE AREAS. ESTIMATED PLAN VALUE INCLUDES 15% SHRINKAGE FACTOR. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR THIS EARTHFILL.
- BID ITEM FOR EARTHFILL (GENERAL DAM) SHALL CONSIST OF EXCAVATING, PLACING AND COMPACTING EARTHFILL NECESSARY TO CONSTRUCT THE PORTION OF THE EMBANKMENT THAT IS NOT CONSIDERED PART OF THE EMBANKMENT CORE. COHESIVE MATERIAL FOUND DURING GENERAL EXCAVATION AND CLAY LINER EXCAVATION CAN BE USED FOR THIS AREA. ESTIMATED PLAN VALUE INCLUDES 15% SHRINKAGE FACTOR. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR FILL FOR THIS ITEM.
- BID ITEM FOR EARTHFILL (DAM CORE) SHALL CONSIST OF EXCAVATING, PLACING AND COMPACTING EARTHFILL NECESSARY TO CONSTRUCT THE PORTION OF THE EMBANKMENT DESIGNATED THE EMBANKMENT CORE, INCLUDING THE CORE TRENCH. COHESIVE MATERIAL TAKEN FROM THE DESIGNATED BORROW AREA SHOULD BE USED FOR THIS AREA. ESTIMATED PLAN VALUE INCLUDES 15% SHRINKAGE FACTOR. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR FILL FOR THIS ITEM.
- BID ITEM FOR EARTHFILL (CLAY LINER) SHALL CONSIST OF EXCAVATING, PLACING AND COMPACTING EARTHFILL NECESSARY TO CONSTRUCT THE COMPACTED CLAY LINER AS SHOWN ON THE PLANS FOR THE WETLAND AREA. COHESIVE MATERIAL TAKEN FROM THE DESIGNATED BORROW AREA SHOULD BE USED FOR THIS AREA. ESTIMATED PLAN VALUE INCLUDES 15% SHRINKAGE FACTOR. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR FILL FOR THIS ITEM.
- BID ITEM FOR DRAINFILL (SAND) SHALL CONSIST OF FURNISHING AND PLACING DRAINFILL REQUIRED IN THE CONSTRUCTION OF STRUCTURE DRAINAGE SYSTEMS AND FILTER DIAPHRAGMS AROUND CONDUITS. THIS ITEM WILL CONSIST OF THE EXCAVATION NECESSARY TO CONSTRUCT THE TOE DRAINS, INCLUDING BACKFILL WITH MATERIAL MEETING THE REQUIREMENTS OF FINE DRAINFILL.
- BID ITEM FOR TOPSOIL PLACEMENT SHALL CONSIST OF SPREADING SALVAGED AND STOCKPILED TOPSOIL AS THE SURFACE LAYER OF ALL EXCAVATIONS AND EARTHFILLS THAT WILL BE SEEDDED. TOPSOIL SHALL BE PLACED AS THE FINAL LIFT. AREAS TO RECEIVE A MINIMUM OF 6" LAYER OF TOPSOIL INCLUDE AREAS OF THE EMBANKMENT THAT DO NOT HAVE RIPRAP, BORROW AREA, COMPACTED CLAY LINER AREA OF WETLAND, AND ADDITIONAL FILL PLACED OVER NEW TILE.
- BID ITEM FOR TOE DRAIN (6"Ø PERFORATED CPP) SHALL CONSIST OF FURNISHING AND INSTALLING 6-INCH PERFORATED CORRUGATED POLYETHYLENE TUBING (SINGLE WALL) USED AS A DRAIN TILE FOR THE TOE DRAIN AS SHOWN ON THE DRAWINGS. SAND BACKFILL AROUND THE TILE SHALL BE PAID UNDER A SEPARATE BID ITEM (SEE BID ITEM NO. 14). 10' LENGTHS OF 8"Ø GALVANIZED CMP SHALL BE UTILIZED AT THE EXPOSED OUTLETS OF THE TOE DRAIN TILE (TWO LOCATIONS). THE METAL OUTLET SHALL BE PAID UNDER A SEPARATE BID ITEM (SEE BID ITEM NO. 23).
- BID ITEM FOR 6"Ø HDPE DUAL-WALL SHALL CONSIST OF FURNISHING AND INSTALLING 6-INCH, NON-PERFORATED, HDPE, DUAL-WALL CORRUGATED POLYETHYLENE TUBING USED AS A DRAIN TILE AS SHOWN ON THE DRAWINGS. MEASUREMENT AND PAYMENT FOR 6-INCH NON-PERFORATED DUAL-WALL POLYETHYLENE TUBING SHALL BE ON AN INSTALLED LINEAR FOOT BASIS, AND SHALL INCLUDE ALL NECESSARY FITTINGS AND ADAPTERS.
- BID ITEM FOR 8"Ø HDPE DUAL-WALL SHALL CONSIST OF FURNISHING AND INSTALLING 8-INCH, NON-PERFORATED, HDPE, DUAL-WALL CORRUGATED POLYETHYLENE TUBING USED AS A DRAIN TILE AS SHOWN ON THE DRAWINGS. MEASUREMENT AND PAYMENT FOR 8-INCH NON-PERFORATED DUAL-WALL POLYETHYLENE TUBING SHALL BE ON AN INSTALLED LINEAR FOOT BASIS, AND SHALL INCLUDE ALL NECESSARY FITTINGS AND ADAPTERS. A 20' LENGTH OF 8"Ø GALVANIZED CMP SHALL BE UTILIZED AT THE EXPOSED OUTLET OF THE TILE (THREE LOCATIONS). THE METAL OUTLET SHALL BE PAID UNDER A SEPARATE BID ITEM (SEE BID ITEM NO. 23).
- BID ITEM FOR 18"Ø HDPE DUAL-WALL SHALL CONSIST OF FURNISHING AND INSTALLING 18-INCH, NON-PERFORATED, HDPE, DUAL-WALL CORRUGATED POLYETHYLENE TUBING USED AS A DRAIN TILE AS SHOWN ON THE DRAWINGS. MEASUREMENT AND PAYMENT FOR 18-INCH NON-PERFORATED DUAL-WALL POLYETHYLENE TUBING SHALL BE ON AN INSTALLED LINEAR FOOT BASIS, AND SHALL INCLUDE ALL NECESSARY FITTINGS AND ADAPTERS. SEE SPECIFIC CONNECTION DETAILS ON FOR 18"Ø PIPES.
- BID ITEM FOR 36"Ø HDPE DUAL-WALL SHALL CONSIST OF FURNISHING AND INSTALLING 36-INCH, NON-PERFORATED, HDPE, DUAL-WALL CORRUGATED POLYETHYLENE TUBING USED AS A DRAIN TILE AS SHOWN ON THE DRAWINGS. MEASUREMENT AND PAYMENT FOR 36-INCH NON-PERFORATED DUAL-WALL POLYETHYLENE TUBING SHALL BE ON AN INSTALLED LINEAR FOOT BASIS, AND SHALL INCLUDE ALL NECESSARY FITTINGS AND ADAPTERS AND IA DOT CLASS I BEDDING MATERIAL. BEDDING SHALL BE CAREFULLY PLACED AND COMPACTED TO TOP OF PIPE W/ 4" BEDDING BELOW PIPE. SEE SPECIFIC CONNECTION DETAILS FOR THE 36"Ø PIPE. A 20' LENGTH OF 36"Ø GALVANIZED CMP SHALL BE UTILIZED AT THE EXPOSED OUTLET OF THE TILE (ONE LOCATION). THE METAL OUTLET SHALL BE PAID UNDER A SEPARATE BID ITEM (SEE BID ITEM NO. 25).
- BID ITEM FOR ALUMINUM CMP DRAW-DOWN STRUCTURE SHALL CONSIST OF PROVIDING AND INSTALLING THE ALUMINUM DRAW DOWN STRUCTURE, STOP LOGS, AND CONCRETE BASE AS SHOWN ON THE DRAWINGS AND DETAIL SHEETS.
- BID ITEM FOR ALUMINUM CMP DRAW-DOWN INLET/OUTLET SHALL CONSIST OF PROVIDING AND INSTALLING THE 18-INCH DIAMETER CMP INLET AND OUTLET PIPES AS SHOWN ON THE DRAWINGS.
- BID ITEM FOR CMP OUTLET 8"Ø SHALL CONSIST OF FURNISHING AND INSTALLING THE 8"Ø CMP AND FITTINGS SHOWN ON THE PLANS FOR TILE OUTLETS, INCLUDING ANIMAL GUARD AT OUTLET END OF PIPE.
- BID ITEM FOR CMP OUTLET - 36"Ø SHALL CONSIST OF FURNISHING AND INSTALLING THE 36"Ø CMP AND FITTINGS SHOWN ON THE PLANS FOR TILE OUTLETS, INCLUDING ANIMAL GUARD AT OUTLET END OF PIPE.
- BID ITEM FOR RIPRAP (IA DOT CLASS C) SHALL CONSIST OF FURNISHING AND PLACING THE ROCK RIPRAP IN THE LOCATIONS AS SHOWN ON THE DRAWINGS. ROCK SHALL BE CLASS C REVELTMENT STONE AS DEFINED BY IOWA DEPARTMENT OF TRANSPORTATION. NON-WOVEN FILTER FABRIC IS REQUIRED BENEATH ALL ROCK/RIPRAP AND SHALL BE SECURED TO SLOPES AND BOTTOM, USING PINS, AS NOTED IN THE SPECIFICATIONS. QUANTITY IS BASED ON TONS. CONTRACTOR SHALL PROVIDE SCALE TICKETS WITH WEIGHTS INCLUDING TARE WEIGHTS, GROSS WEIGHTS, AND NET WEIGHTS OF MATERIAL DELIVERED.

- BID ITEM FOR RIPRAP (IA DOT CLASS E) SHALL CONSIST OF FURNISHING AND PLACING THE ROCK RIPRAP IN THE LOCATIONS AS SHOWN ON THE DRAWINGS. ROCK SHALL BE CLASS E REVELTMENT STONE AS DEFINED BY IOWA DEPARTMENT OF TRANSPORTATION. NON-WOVEN FILTER FABRIC IS REQUIRED BENEATH ALL ROCK/RIPRAP AND SHALL BE SECURED TO SLOPES AND BOTTOM, USING PINS, AS NOTED IN THE SPECIFICATIONS. QUANTITY IS BASED ON TONS. CONTRACTOR SHALL PROVIDE SCALE TICKETS WITH WEIGHTS INCLUDING TARE WEIGHTS, GROSS WEIGHTS, AND NET WEIGHTS OF MATERIAL DELIVERED.
- BID ITEM FOR CEMENT GROUT SHALL CONSIST OF FURNISHING AND PLACING CONCRETE GROUT ON THOSE PORTIONS OF THE RIPRAP SHOWN ON THE DRAWINGS. GROUT FILL QUANTITY IS BASED ON AN APPLICATION RATE OF 0.6FT³/FT² OF RIPRAP.
- BID ITEM SHALL CONSIST OF FURNISHING AND PLACING TURF REINFORCEMENT MAT SUDAS TYPE 4 TRM PER SECTION 9040 2.17 AND INSTALLATION TO MANUFACTURER'S RECOMMENDATIONS. TRM SHALL BE PROPEX ARMORMAX 75 OR APPROVED EQUAL.
- BID ITEM FOR ALUMINUM CMP RISER SHALL CONSIST OF PROVIDING AND INSTALLING THE 36-INCH DIAMETER CMP RISER IN WETLAND AS SHOWN ON THE DRAWINGS.
- BID ITEM FOR ALUMINUM CMP RISER SHALL CONSIST OF PROVIDING AND INSTALLING THE 36-INCH DIAMETER CMP RISER IN STILLING BASIN AS SHOWN ON THE DRAWINGS.
- DEWATERING AND WATER MAINTENANCE IS THE CONTRACTOR'S RESPONSIBILITY, AND IS CONSIDERED INCIDENTAL TO THE PROJECT.

NRCS SPECIFICATIONS:

- IA-1 SITE PREPARATION
- IA-5 POLLUTION CONTROL
- IA-6 SEEDING AND MULCHING FOR PROTECTIVE COVER
- CS-8 MOBILIZATION & DEMOBILIZATION
- IA-9 SUBSURFACE DRAIN INVESTIGATION, REMOVAL, AND REPAIR
- IA-11 REMOVAL OF WATER
- IA-13 SHEET PILING
- IA-21 EXCAVATION
- IA-23 EARTHFILL
- IA-24 DRAINFILL (SAND)
- IA-26 TOPSOILING
- IA-31 CONCRETE
- IA-45 PLASTIC (PVC, PE) PIPE
- IA-46 TILE DRAINS FOR LAND DRAINAGE
- IA-51 CORRUGATED METAL PIPE CONDUITS
- IA-61 LOOSE ROCK RIPRAP
- IA-62 CONCRETE GROUT FOR RIPRAP
- IA-81 METAL FABRICATION AND INSTALLATION
- IA-95 GEOTEXTILE

ADDITIONAL SPECIFICATIONS:

SUDAS 9040 2.17 TURF REINFORCEMENT MAT

ADDITIONAL NOTES:

- THE PROJECT SPECIFICATIONS AS PREPARED BY IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP AND DUCKS UNLIMITED, INC. SHALL BE CONSIDERED AS PART OF THIS DOCUMENT. THE NATURAL RESOURCES CONSERVATION SERVICE CONSTRUCTION SPECIFICATIONS SHALL ALSO APPLY.
- ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000 www.ducks.org



DUCKS UNLIMITED

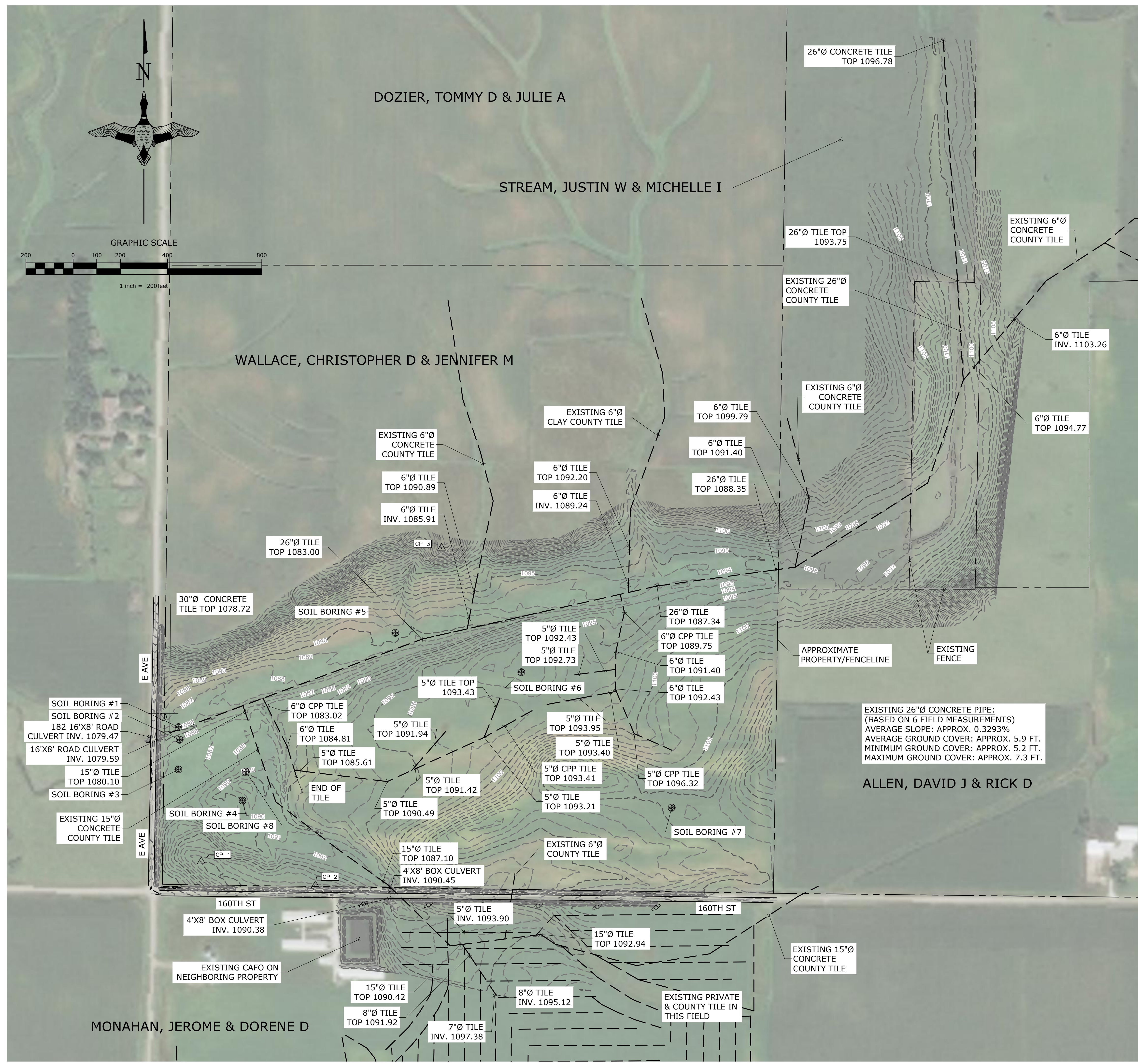
SPECIFICATIONS, QUANTITIES, & NOTES
PROJECT NO. GRE853235C
GREENE COUNTY
IOWA

CAD FILE:
IA-340-5 C001 Cover Sheet & Specs
DESIGNED BY: A.S.
DRAWN BY: A.S.
SURVEYED BY: A.S. & R.V.
BIOLOGIST: M.S.
DATE:
7-14-23
PROJECT NUMBER:
US-IA-340-5

Revision	Sheet	Revisions	Date	By
1		IDEALS REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

C002

C:\Users\schippers\Documents\Iowa\02_CAD Projects\IA-340-2_CREP PROJECTS\GREENE WALLACE\CD.DRAWING\IA-340-5_C051_Topo Survey.dwg, 7/14/2023 2:52 PM, Andrew Schippers, Topo, None



LEGEND

— CHANNELED	△ HORIZONTAL & VERTICAL CONTROL
- - - DITCH	○ UTILITY POLE
- - - MAJOR CONTOUR	— OE — OVERHEAD ELECTRIC
- - - MINOR CONTOUR	- - - ROAD OR TRAIL
- - - EDGE OF PAVEMENT	- - - FENCE LINE
- - - EDGE OF GRAVEL	- - - APPROXIMATE PROPERTY LINE
⊗ SOIL BORING	

SOIL BORING LOG

BORING #	GENERAL DESCRIPTION
1	25' BORING; SANDY LEAN CLAY; VARIES IN DEPTH
2	25' BORING; LEAN TO FAT CLAY; VARIES IN DEPTH
3	25' BORING; LEAN CLAY W/ SAND; VARIES IN DEPTH
4	5' AUGER BORING; SANDY LEAN CLAY
5	5' AUGER BORING; FAT CLAY W/ SAND
6	5' AUGER BORING; CLAYEY SAND
7	5' AUGER BORING; LEAN CLAY W/ SAND
8	5' AUGER BORING; CLAYEY SAND W/ GRAVEL

*FOR DETAILED DESCRIPTIONS OF THE SOIL BORINGS OBTAINED FROM THE SITE, REFERENCE CTS GEOTECHNICAL REPORT, DATED MAY 13, 2022, AS WELL AS ADDENDUM NOS. 1 AND 2 FOR THE GEOTECHNICAL REPORT.

August 27, 2021
 US-IA-340-5, Greene County - Wallace
 Topographic Survey Field Book: CREP

HORIZONTAL CONTROL
 Coordinates are Iowa State Plane Coordinates North, Zone 1401 coordinates in US Survey feet (NAD 83 (1996)). They were established from the OPUS solution for Control Point #1 using a Trimble R12 GPS base receiver, occupied for 10 hours on September 13, 2021.

VERTICAL CONTROL
 Elevations were established from OPUS solution for control point #1 using (Geoid 2012b) CONUS file, elevation 1099.98 on the NAVD 88.

FIELD WORK TIMELINE:
 August 27, 2021 - Initial Topographic Survey; Control Points Set
 September 13, 2021 - Initial Tile Investigation; Obtain OPUS Solution
 November 3-4, 2021 - Complete Topographic Survey
 November 18-19, 2021 - Complete Tile Investigation
 April 18, 2022 - Obtain Soil Borings (CTS)

CONTROL POINT DATA

POINT #	ELEVATION	NORTHING	EASTING	DESCRIPTION
1	1099.98	3509732.91	4636069.22	SET CAPPED REBAR
2	1098.30	3509631.85	4636552.93	SET CAPPED REBAR
3	1115.31	3511063.69	4637087.96	SET CAPPED REBAR

*A PERMANENT BENCHMARK WILL BE ESTABLISHED BEFORE CONSTRUCTION BEGINS.

GREAT LAKES/ATLANTIC REGIONAL OFFICE
 7322 NEWMAN BOULEVARD, BUILDING 1
 DEXTER, MICHIGAN 48130
 (734) 623-2000 www.ducks.org

DUCKS UNLIMITED

TOPOGRAPHY & EXISTING CONDITIONS
 PROJECT NO. GRE853235C
 GREENE COUNTY
 IOWA

Revision	By	Date	Revisions
1	A.S.	10-18-2022	IDLALS REVIEW REVISIONS
2	A.S.	5-1-2023	MKCS REVIEW REVISIONS
3	A.S.	5-31-2023	SHEET PILE & SEEDING REVISIONS
4	A.S.	7-14-2023	BERM & SHEET PILE REVISIONS

CAD FILE:
 IA-340-5_C051_Topo Survey

DESIGNED BY: A.S.

DRAWN BY: A.S.

SURVEYED BY: A.S. & R.V.

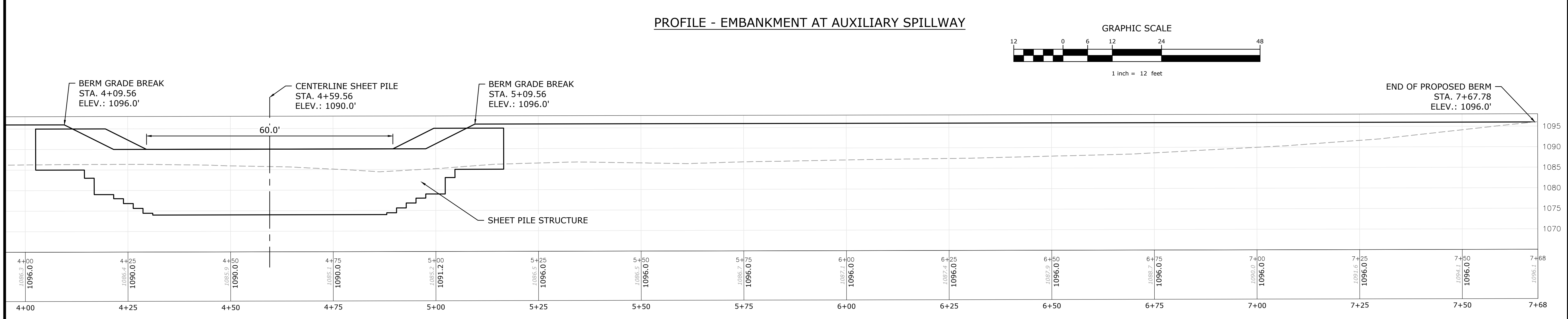
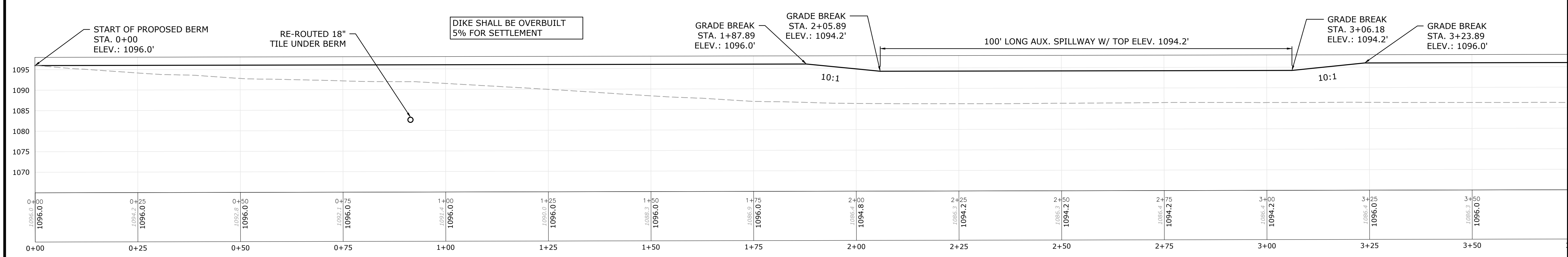
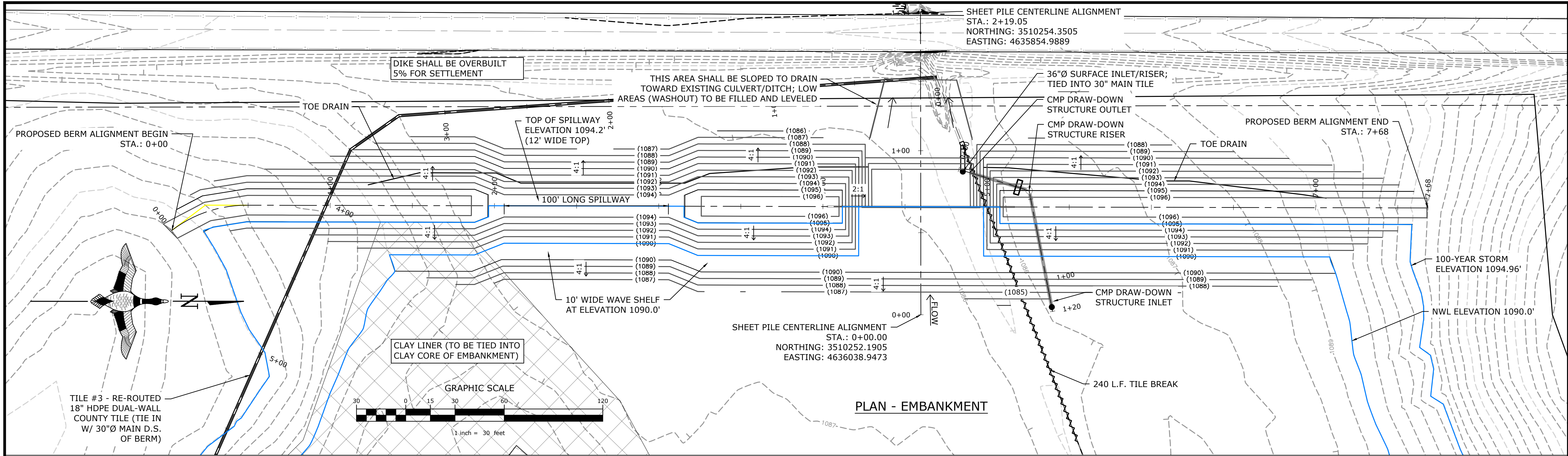
BIOLOGIST: M.S.

DATE:
 7-14-23

PROJECT NUMBER:
 US-IA-340-5

C051

C:\Users\jascippen\Documents\Iowa - Documents\Iowa\02_C3D Projects\IA-340-5_C101_Site Plan.dwg, 7/14/2023 2:52 PM, Andrew Schippers, Embankment Plan & Profile, None



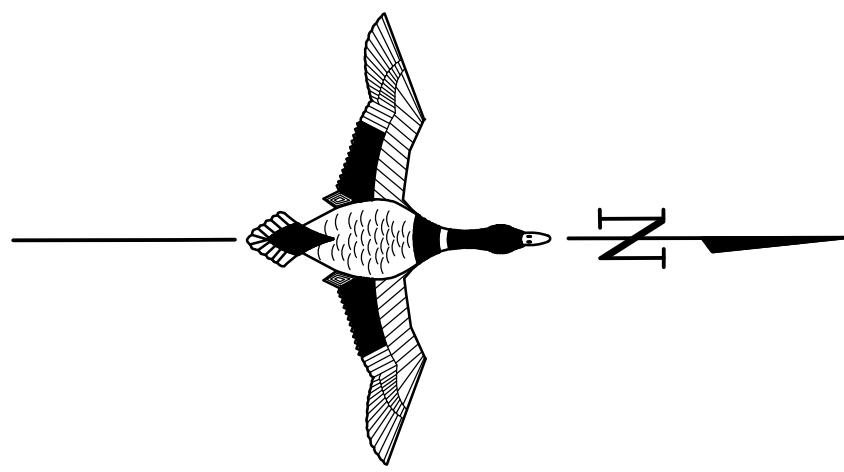
GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000 www.ducks.org

EMBankment PLAN & PROFILE
PROJECT NO. GRE853235C
GREENE COUNTY
IOWA

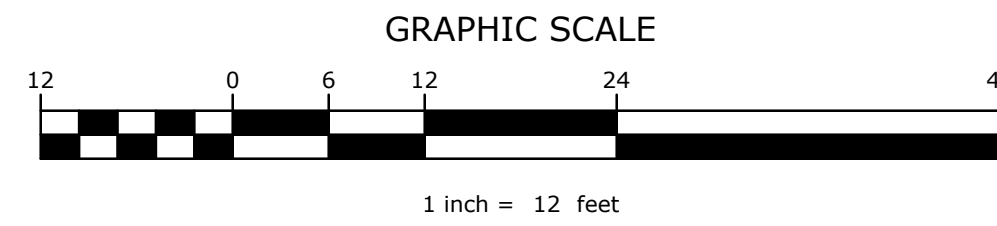
Revision	Sheet	Revisions	Date	By
1		IDEALS REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

CAD FILE:
IA-340-5 C101 Site Plan
DESIGNED BY: A.S.
DRAWN BY: A.S.
SURVEYED BY: A.S. & R.V.
BIOLOGIST: M.S.

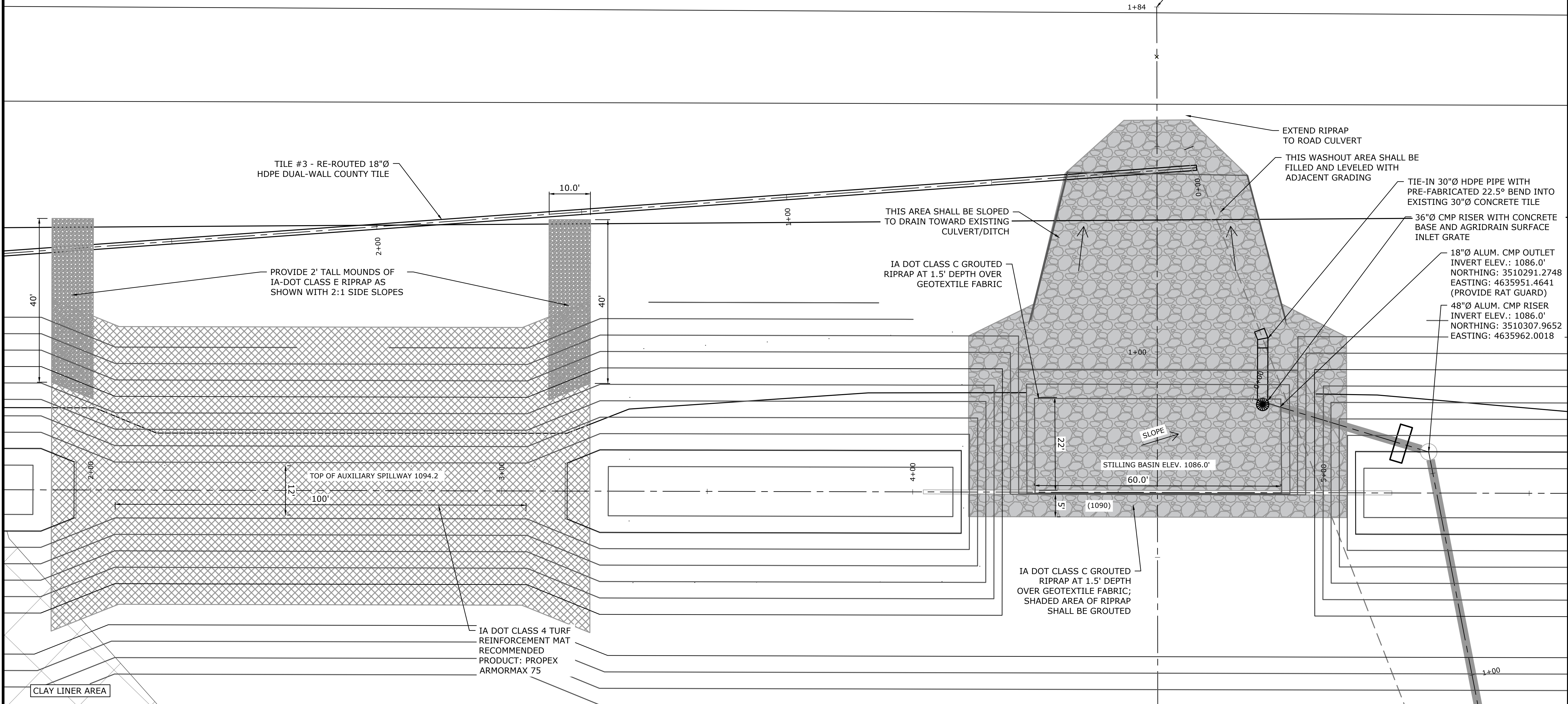
DATE:
7-14-23
PROJECT NUMBER:
US-IA-340-5
C201



- NOTE:**
1. ALL RIPRAP SHALL BE PLACED OVER NON-WOVEN GEOTEXTILE FABRIC.
 2. ALL RIPRAP AT PRIMARY WEIR SHALL BE GROUTED.
 3. CONTRACTOR SHALL PROVIDE MANUFACTURER SHOP DRAWINGS FOR TURF REINFORCING MAT SHOWING ANCHORAGE LOCATION, SPACING, AND LAP CONFIGURATION



SHEET PILE CENTERLINE ALIGNMENT
 STA.: 1+84.00
 NORTHING: 3510254.3505
 EASTING: 4635854.9953



GREAT LAKES/ATLANTIC REGIONAL OFFICE
 7322 NEWMAN BOULEVARD, BUILDING 1
 DEXTER, MICHIGAN 48130
 (734) 623-2000 www.ducks.org

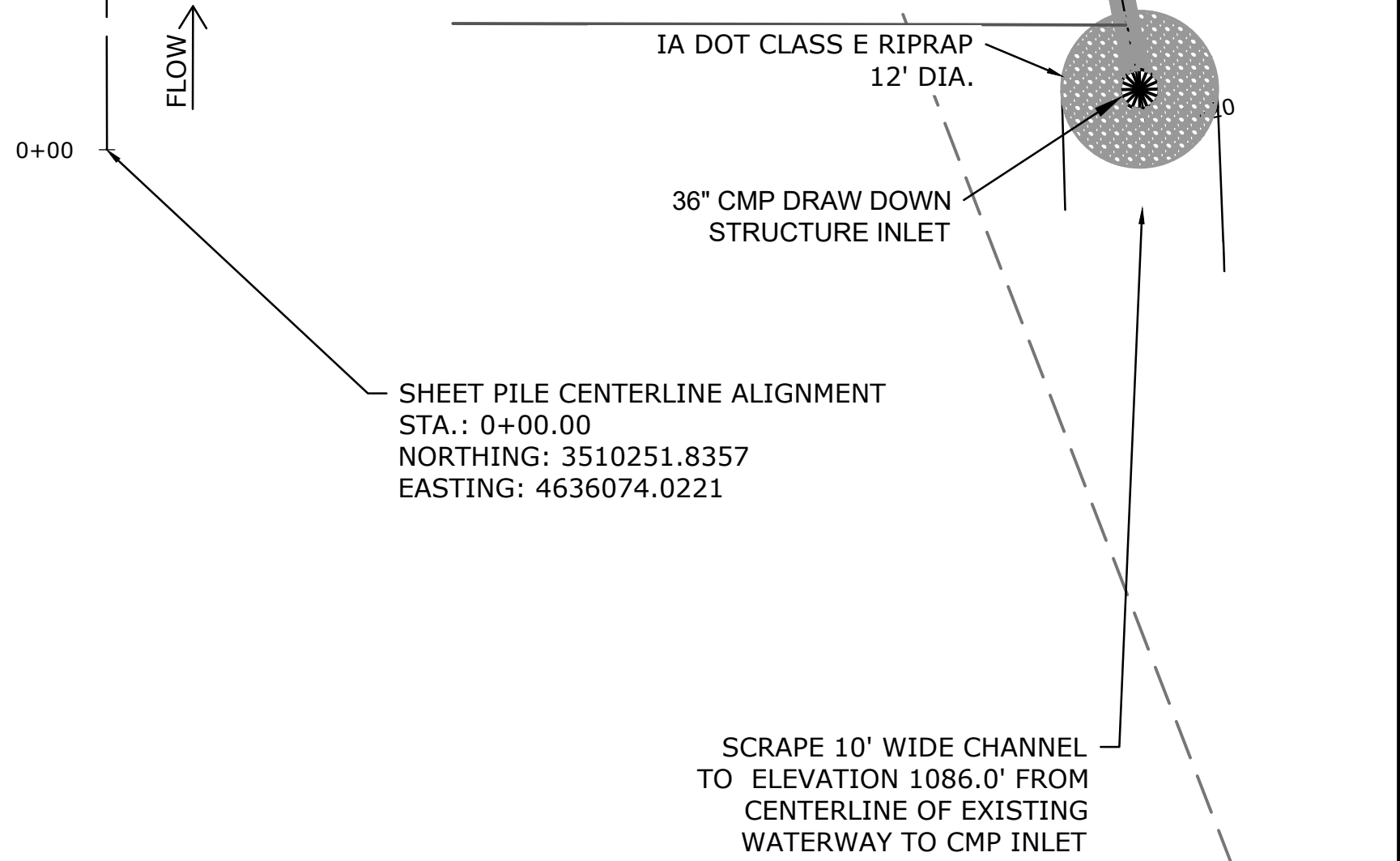
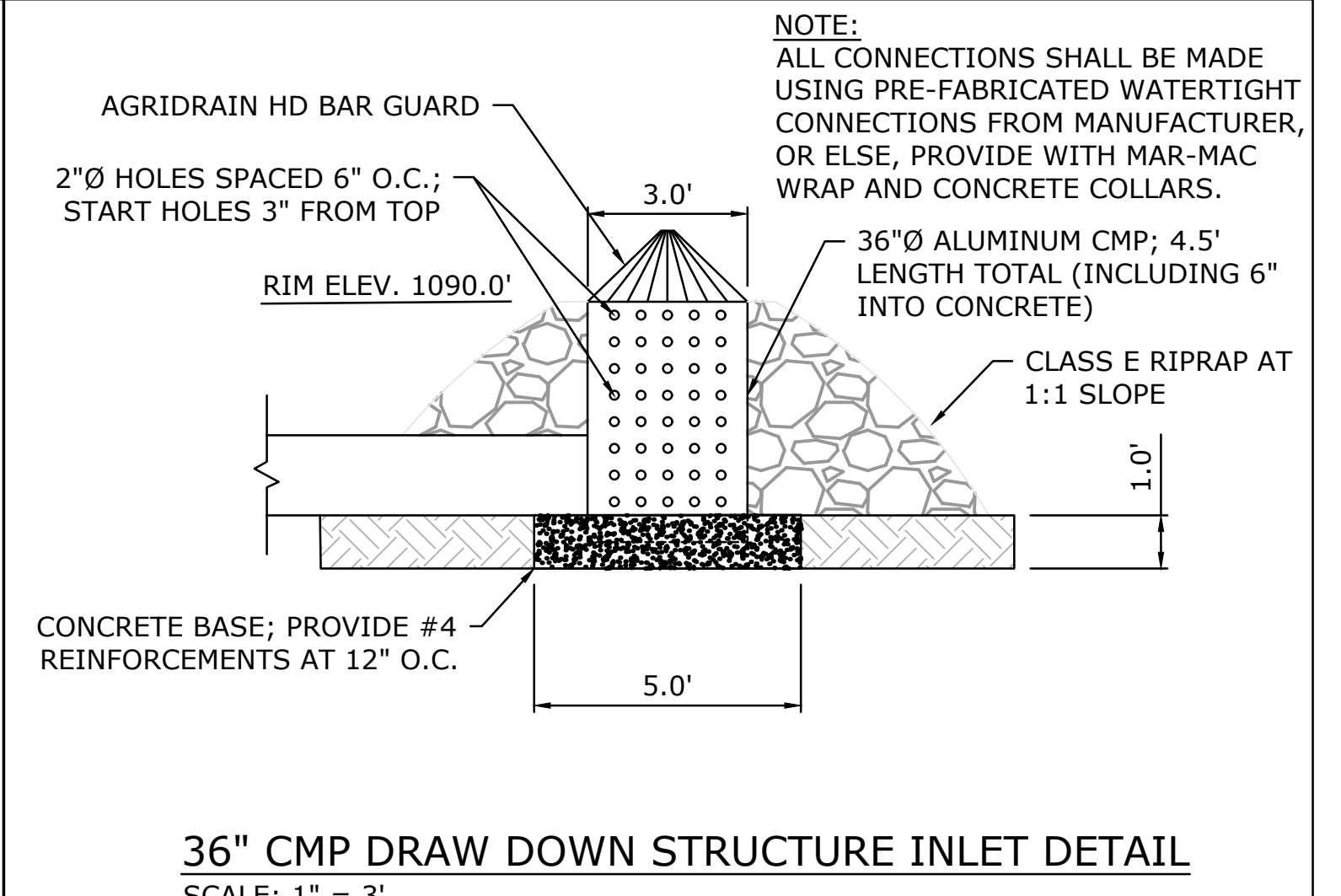
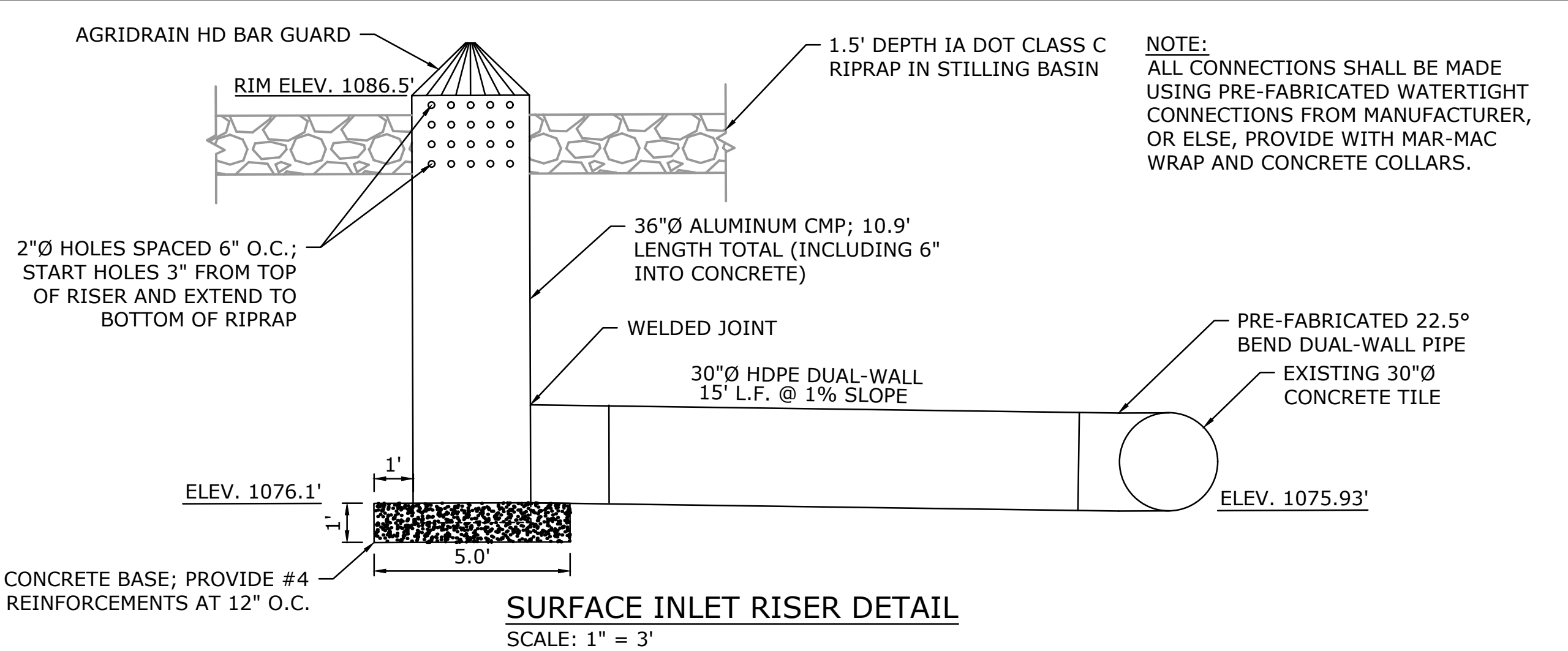
DUCKS UNLIMITED

RIPRAP & DRAW-DOWN
 PLAN
 PROJECT NO. GRE853235C
 GREENE COUNTY
 IOWA

Revision	Sheet	Date	By
1	1	10-18-2023	A.S.
2	1	5-1-2023	A.S.
3	1	5-31-2023	A.S.
4	1	7-14-2023	A.S.

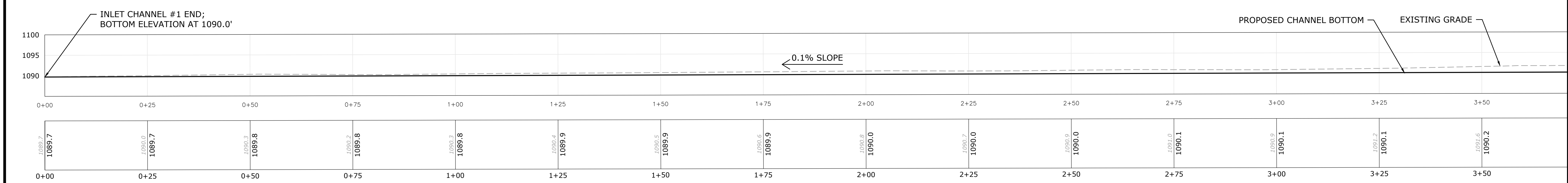
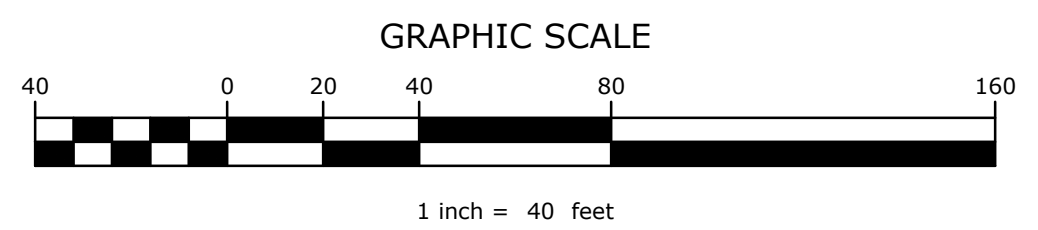
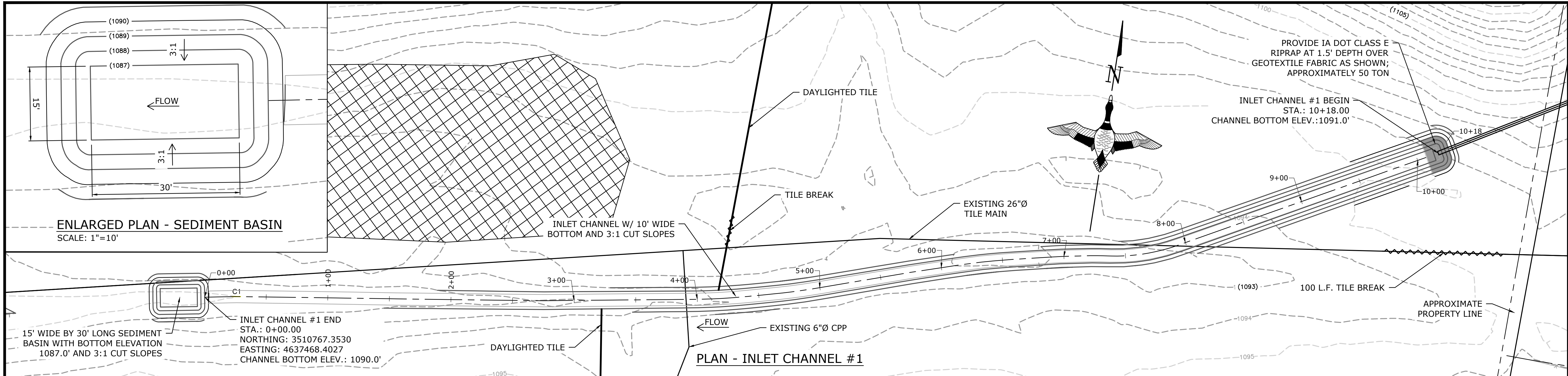
Revisions	Date	By
IDEALS REVIEW REVISIONS	10-18-2023	A.S.
NRCS REVIEW REVISIONS	5-1-2023	A.S.
SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

CAD FILE:	IA-340-5 C101 Site Plan
DESIGNED BY:	A.S.
DRAWN BY:	A.S.
SURVEYED BY:	A.S. & R.V.
BIOLOGIST:	M.S.
DATE:	7-14-23
PROJECT NUMBER:	US-IA-340-5

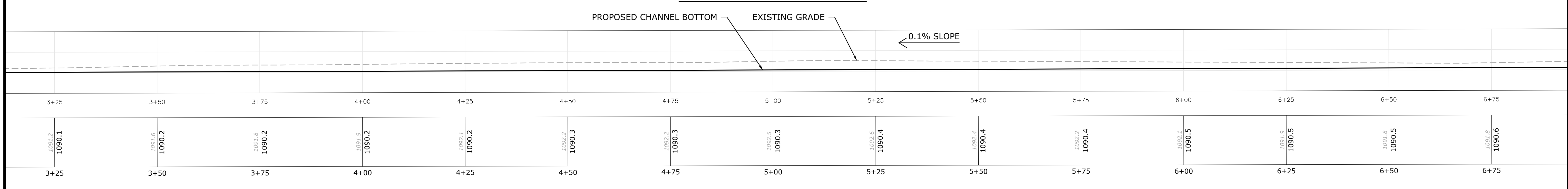


C:\Users\schippers\Documents\Iowa - Documents\Iowa\02_CSD Projects\IA-340-5_C101_Site Plan.dwg, 7/14/2023 2:52 PM, Andrew Schippers, Riprap & Draw-Down Plan, None

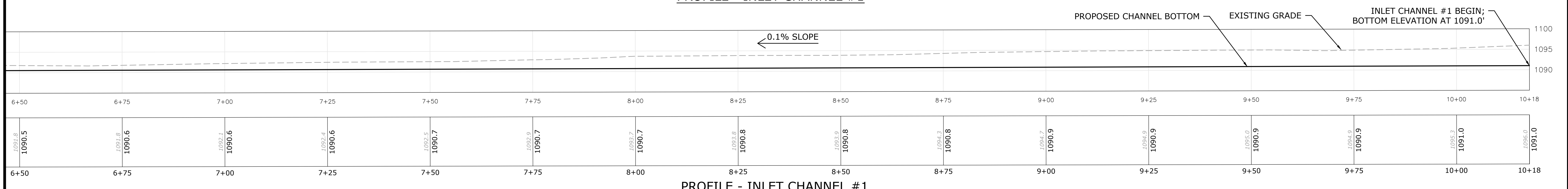
C:\Users\schippers\Documents\Iowa - Documents\Iowa\02_CSD Projects\IA-340-5_C101_Site Plan.dwg, 7/14/2023 2:52 PM, Andrew Schippers, Inlet Channel #1 Plan & Profile, None



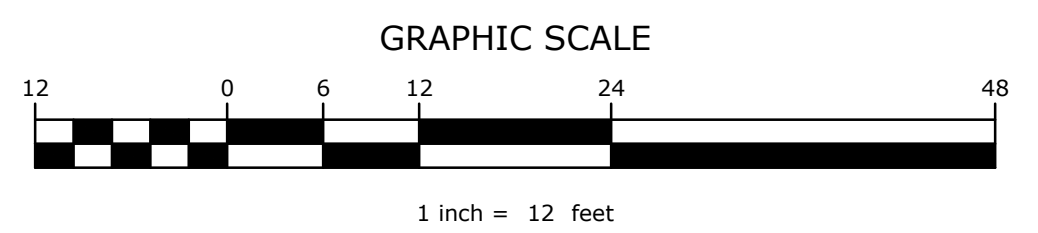
PROFILE - INLET CHANNEL #1



PROFILE - INLET CHANNEL #1



PROFILE - INLET CHANNEL #1



GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000 www.ducks.org

DUCKS UNLIMITED

INLET CHANNEL #1 PLAN & PROFILE
PROJECT NO. GRE853235C
GREENE COUNTY
IOWA

Revision	Sheet	Revisions	Date	By
1		10ALS REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

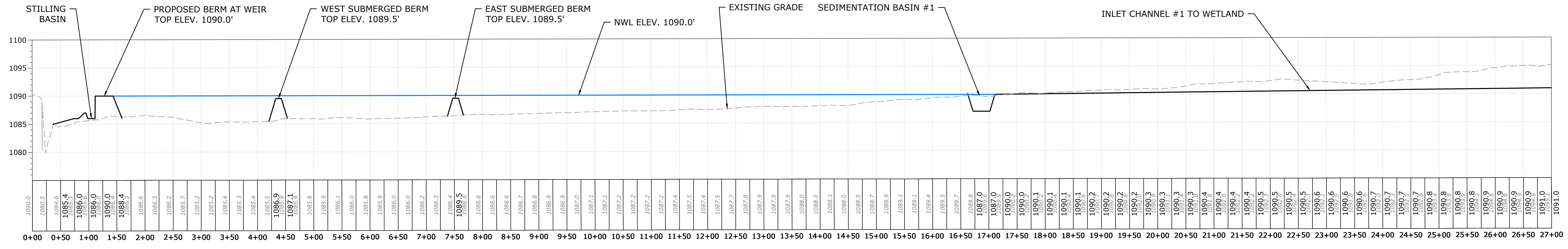
CAD FILE:
IA-340-5 C101 Site Plan

DESIGNED BY: A.S.
DRAWN BY: A.S.
SURVEYED BY: A.S. & R.V.
BIOLOGIST: M.S.

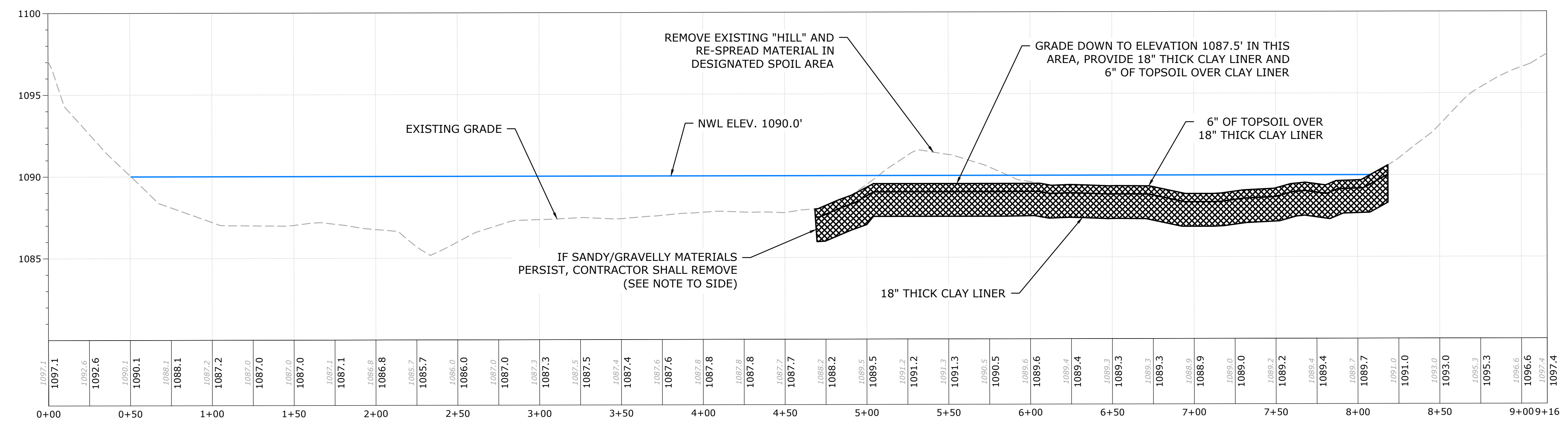
DATE:
7-14-23

PROJECT NUMBER:
US-IA-340-5

C203

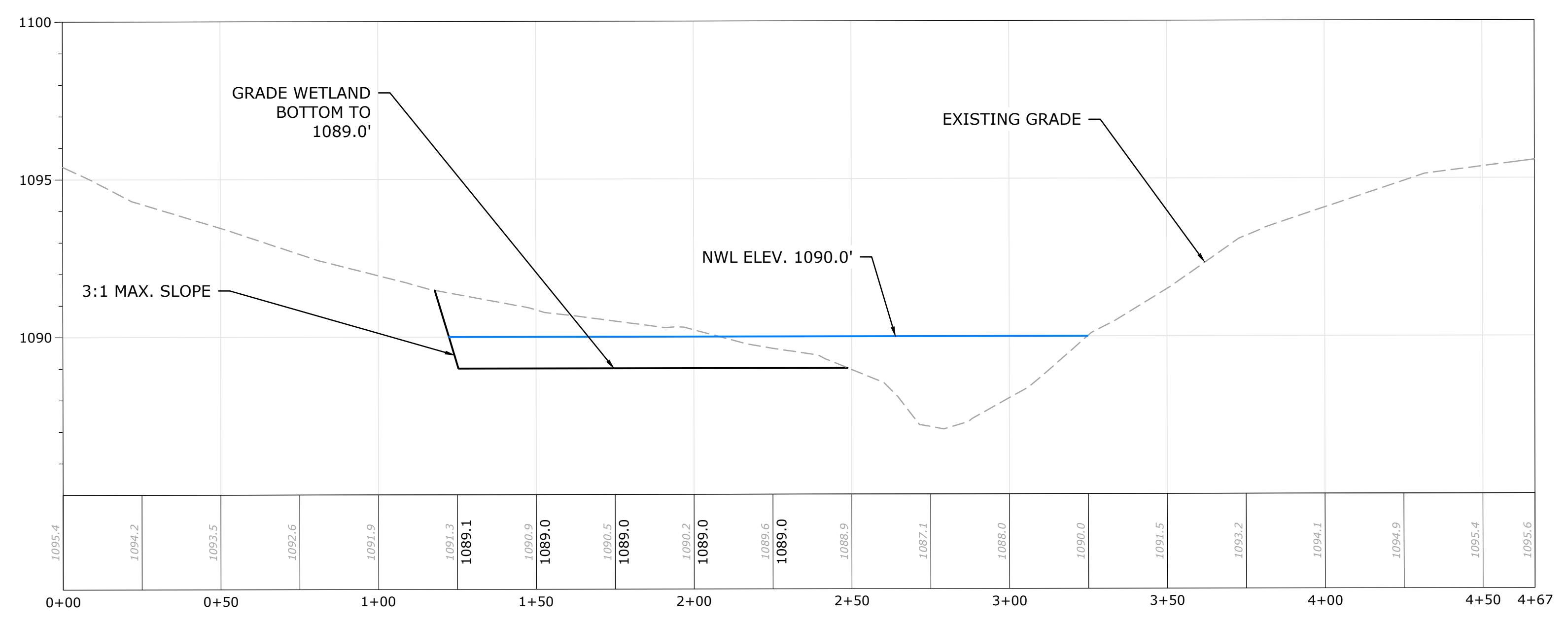


WETLAND PROFILE #1 - ALONG FLOW PATH
 10:1 VERTICAL EXAGGERATION
 SCALE: 1"=90'



NOTE:
 CONTRACTOR SHALL CONTINUE GRADING FOR PLACEMENT OF CLAY LINER UNTIL SANDY/GRAVELLY MATERIAL DOES NOT EXIST WITHIN THE NORMAL WETLAND POOL; ANY WORK OUTSIDE OF THE PLANNED CLAY LINER OUTLINE WILL BE CONSIDERED ADDITIONAL WORK AND WILL BE PAID FOR BASED ON THE UNIT PRICE BID FOR EXCAVATION (CLAY LINER).

WETLAND PROFILE #2 - ACROSS CLAY LINER
 10:1 VERTICAL EXAGGERATION
 SCALE: 1"=40'

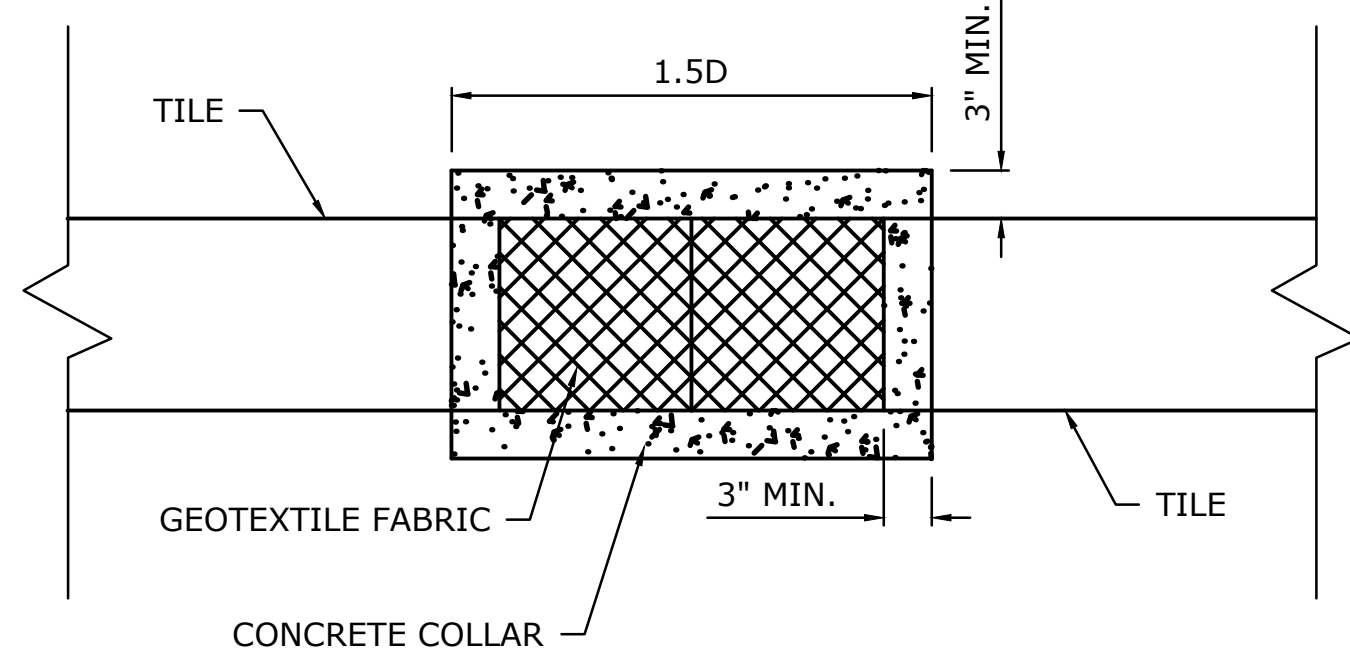


WETLAND PROFILE #3 - ACROSS GRADING AREA
 10:1 VERTICAL EXAGGERATION
 SCALE: 1"=30'

C:\Users\jascipppers\Documents\Iowa - Documents\Iowa\02_C3D Projects\IA-340-5_C101_Site Plan.dwg, 7/14/2023 2:52 PM, Andrew Schippers, Wetland Profiles, None

Revision	Sheet	Revisions	Date	By
1		10ALS REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

CAD FILE:	
IA-340-5 C101 Site Plan	
DESIGNED BY: A.S.	
DRAWN BY: A.S.	
SURVEYED BY: A.S. & R.V.	
BIOLOGIST: M.S.	
DATE:	
7-14-23	
PROJECT NUMBER:	
US-IA-340-5	
C204	



TYPICAL TILE CONNECTION DETAIL
(DOES NOT APPLY TO 18"/36" CONNECTIONS)

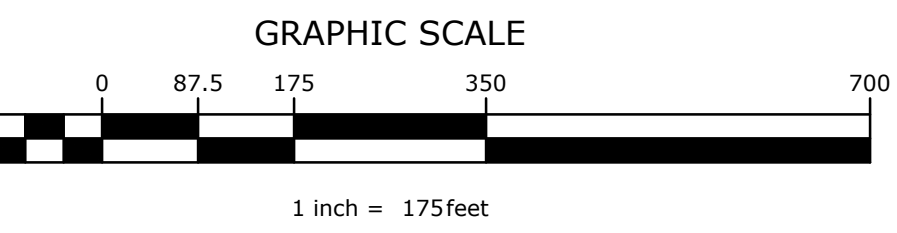
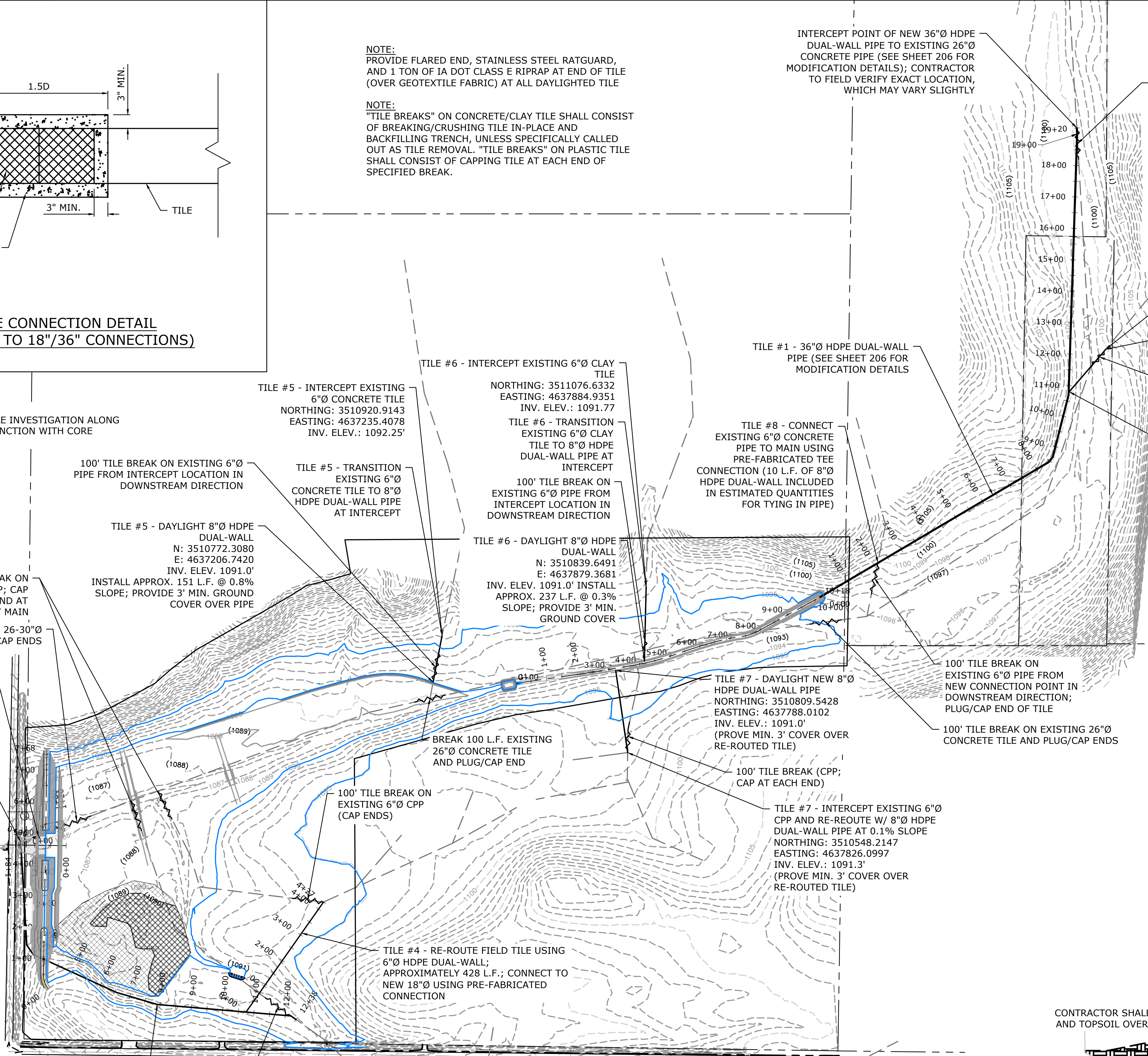
NOTE:
PROVIDE FLARED END, STAINLESS STEEL RATGUARD,
AND 1 TON OF IA DOT CLASS E RIPRAP AT END OF TILE
(OVER GEOTEXTILE FABRIC) AT ALL DAYLIGHTED TILE

NOTE:
"TILE BREAKS" ON CONCRETE/CLAY TILE SHALL CONSIST
OF BREAKING/CRUSHING TILE IN-PLACE AND
BACKFILLING TRENCH, UNLESS SPECIFICALLY CALLED
OUT AS TILE REMOVAL. "TILE BREAKS" ON PLASTIC TILE
SHALL CONSIST OF CAPPING TILE AT EACH END OF
SPECIFIED BREAK.

INTERCEPT POINT OF NEW 36"Ø HDPE
DUAL-WALL PIPE TO EXISTING 26"Ø
CONCRETE PIPE (SEE SHEET 206 FOR
MODIFICATION DETAILS); CONTRACTOR
TO FIELD VERIFY EXACT LOCATION,
WHICH MAY VARY SLIGHTLY

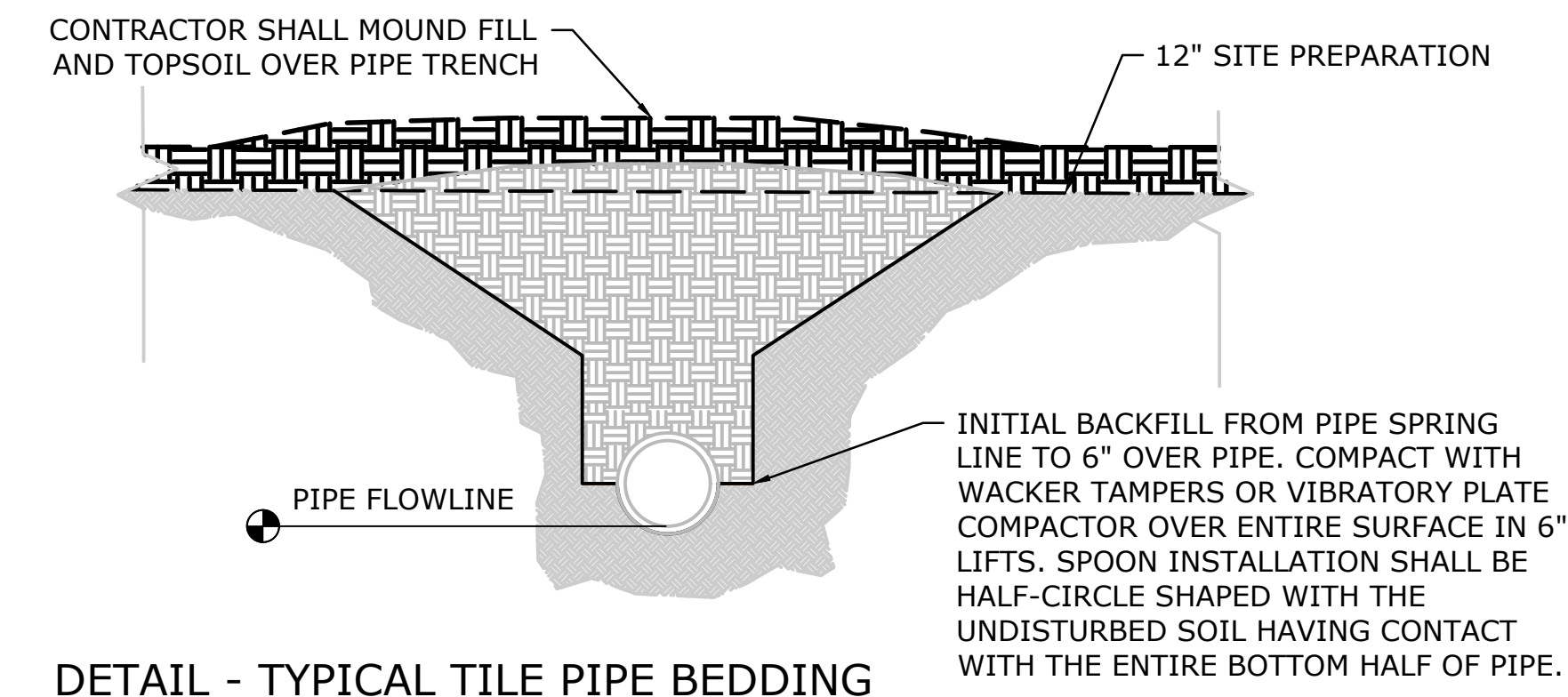
BREAK 100 L.F. EXISTING 26"Ø CONCRETE
TILE AND PLUG/CAP END

NOTE:
CONTRACTOR TO PERFORM TILE INVESTIGATION ALONG
BERM CORE TRENCH IN CONJUNCTION WITH CORE
TRENCH EXCAVATION.



NOTE:
FOR TILE #1 - 36"Ø HDPE DUAL-WALL PIPE,
CONTRACTOR SHALL PROVIDE CRUSHED ROCK
BEDDING (4" BELOW BOTTOM OF PIPE) TO CROWN
OF PIPE

NOTE:
FOR TILE #2 - RE-ROUTED 18"Ø HDPE DUAL-WALL
PIPE, CONTRACTOR SHALL PROVIDE CRUSHED
ROCK BEDDING (4" BELOW BOTTOM OF PIPE) TO
CROWN OF PIPE, IF FILL HEIGHT EXCEEDS 9 FEET.



DETAIL - TYPICAL TILE PIPE BEDDING

Revision	Sheet	Revisions	Date	By
1		IDEALS REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

CAD FILE:
IA-340-5 C101 Site Plan

DESIGNED BY: A.S.
DRAWN BY: A.S.
SURVEYED BY: A.S. & R.V.
BIOLOGIST: M.S.

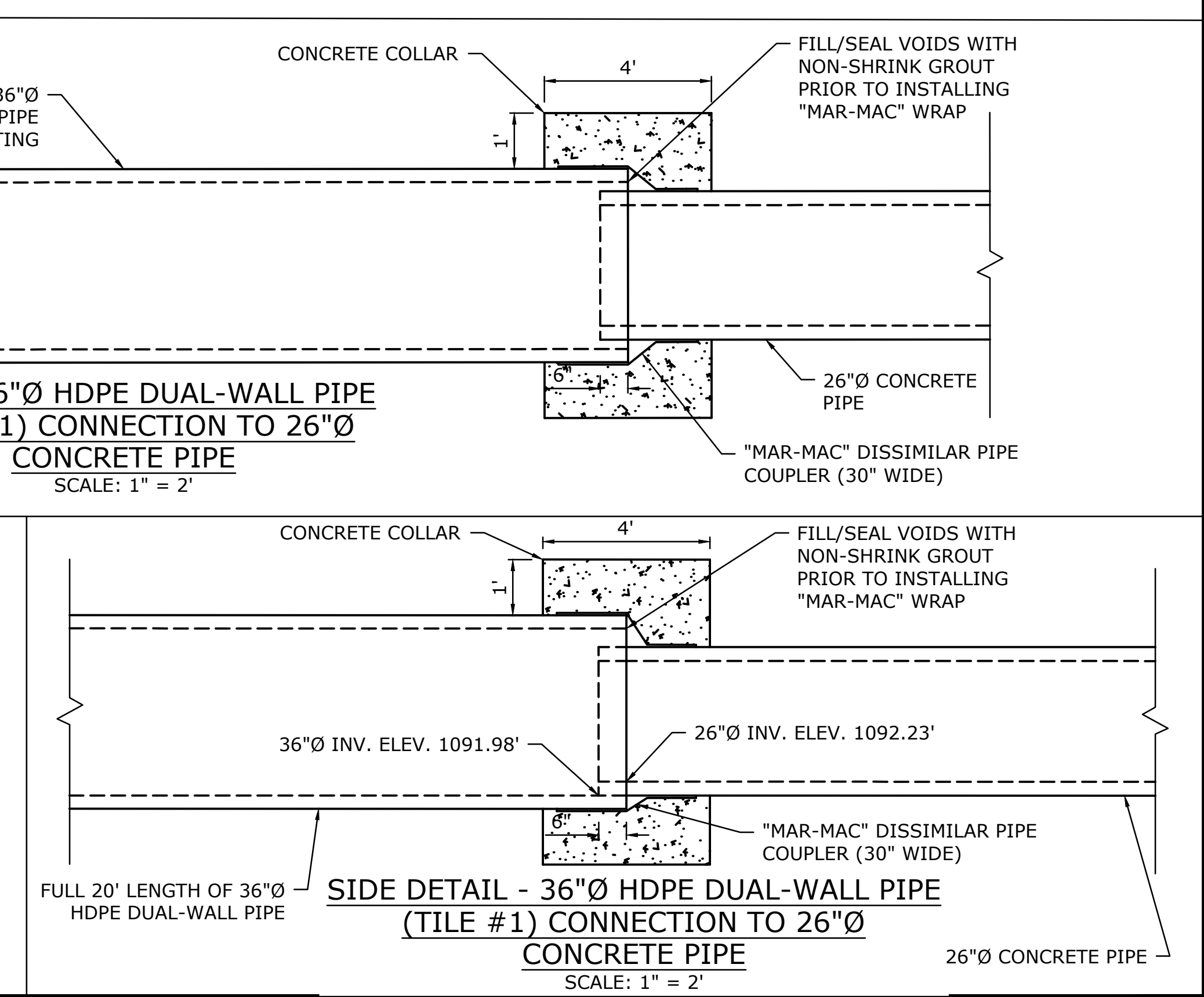
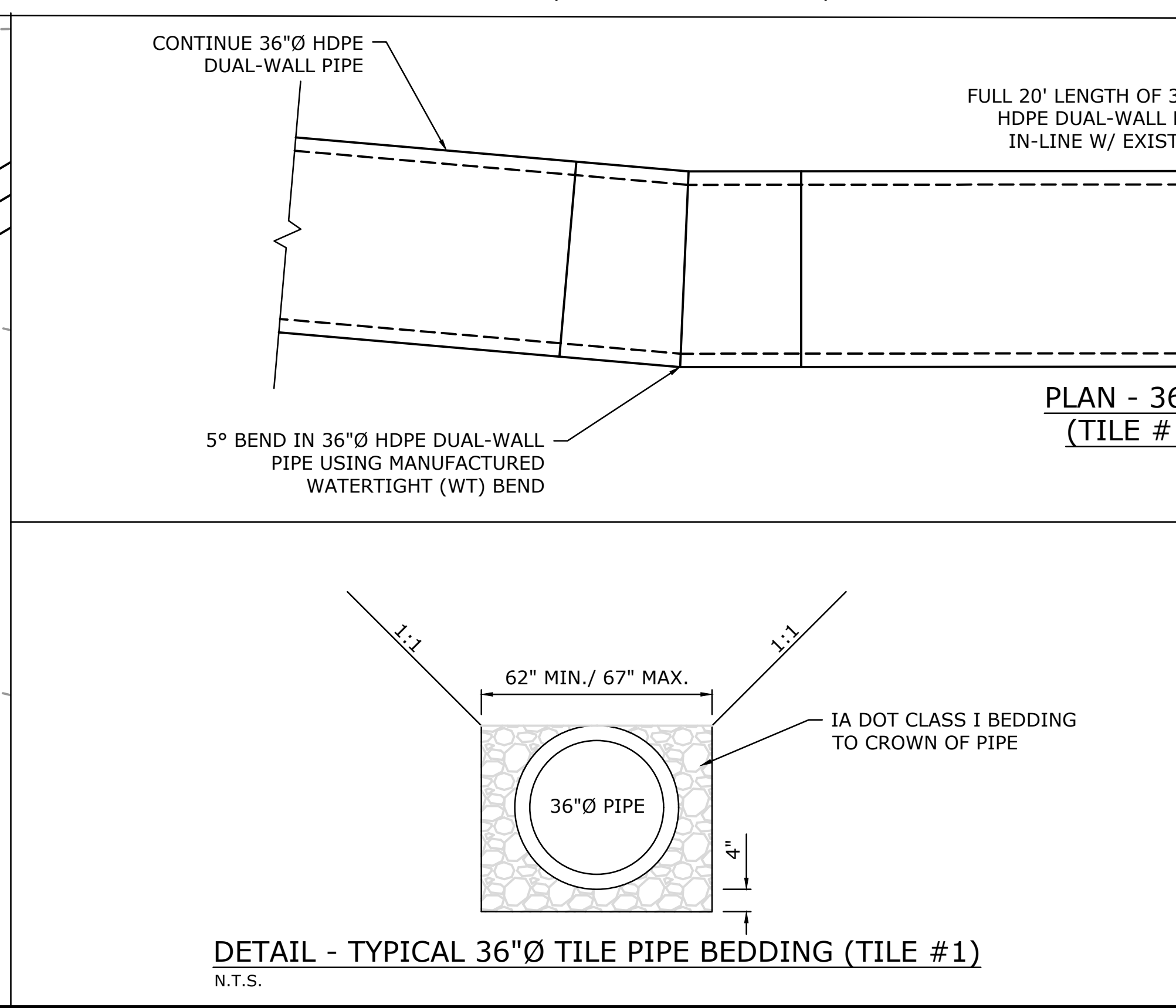
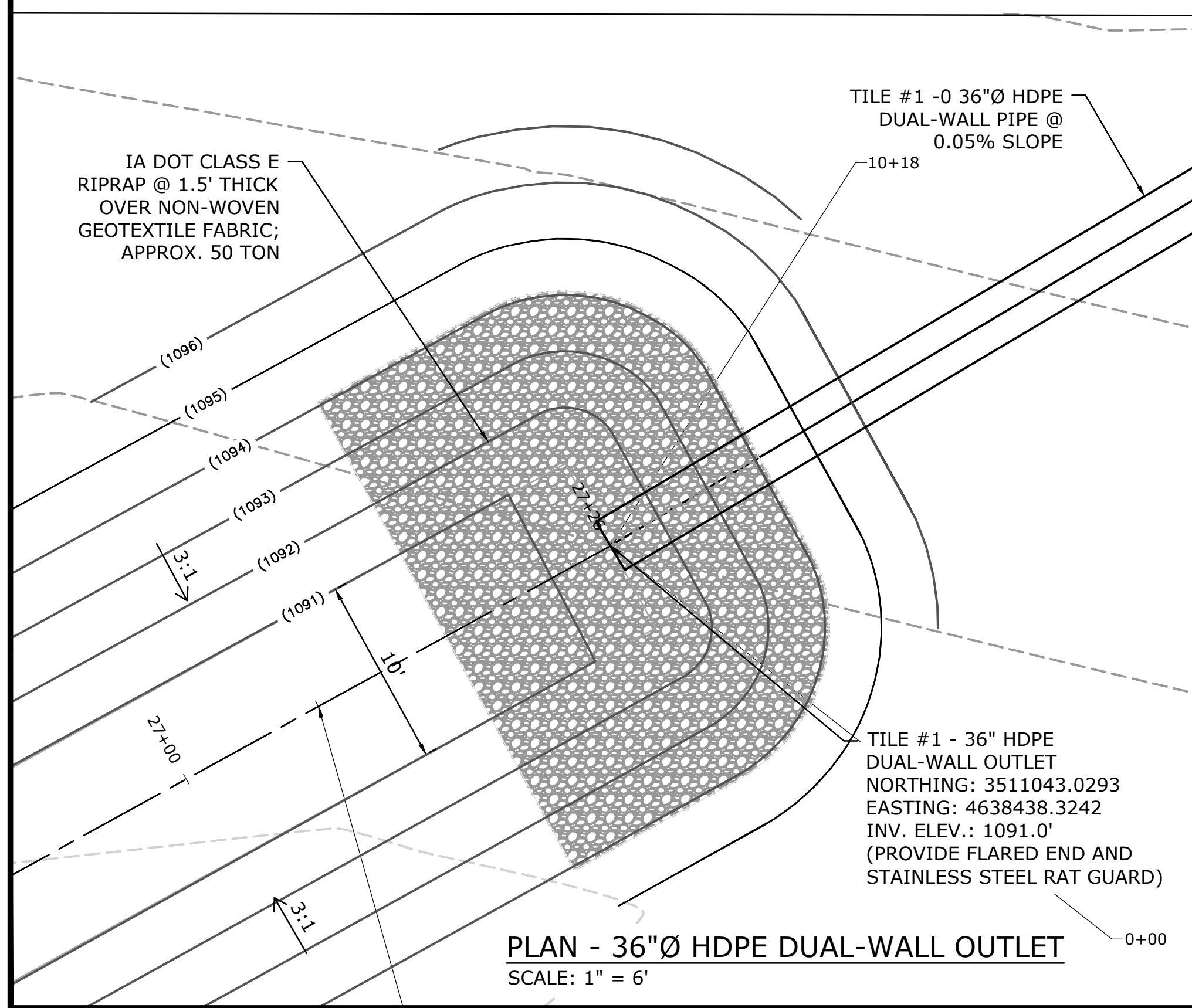
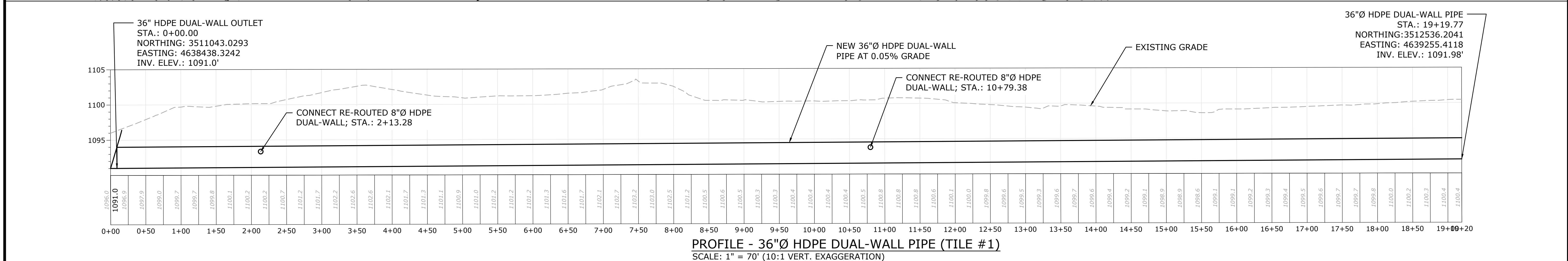
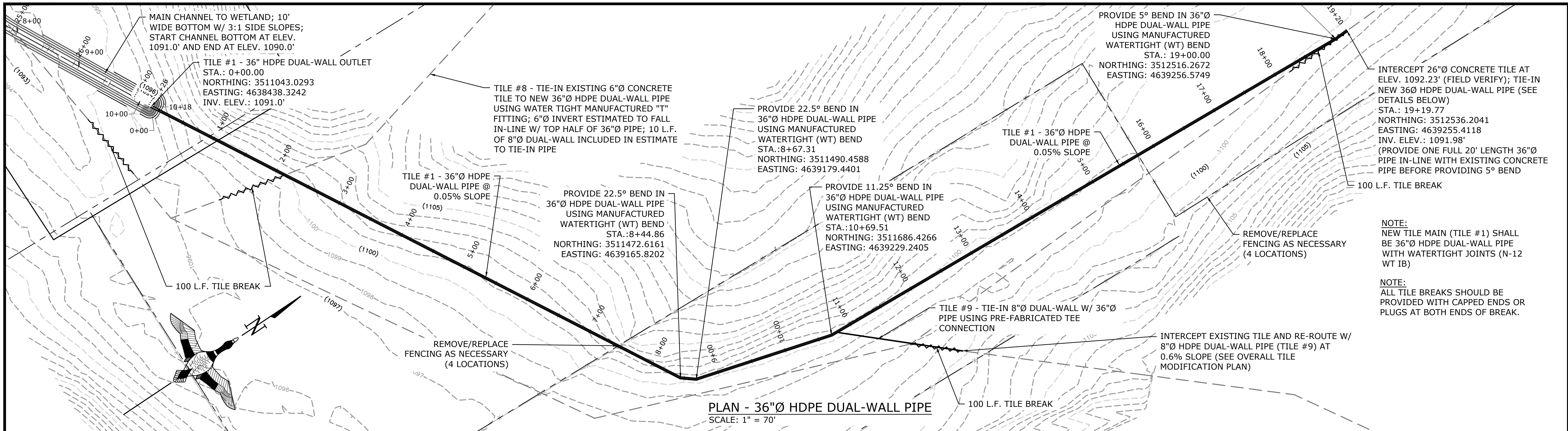
DATE:
7-14-23

PROJECT NUMBER:
US-IA-340-5

C205

C:\Users\schippers\Documents\Iowa - Documents\Iowa\02_CSD Projects\IA-340-5_C101_Site Plan.dwg, 7/14/2023 2:52 PM, Andrew Schippers, Tile Modification Plan, None

C:\Users\schippers\Documents\Iowa - Documents\Iowa\02_CSD Projects\IA-340-5_C101_Site Plan.dwg, 7/14/2023 2:52 PM, Andrew Schippers, Main Tile Plan & Profile, None



GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000 www.ducks.org

DUCKS UNLIMITED

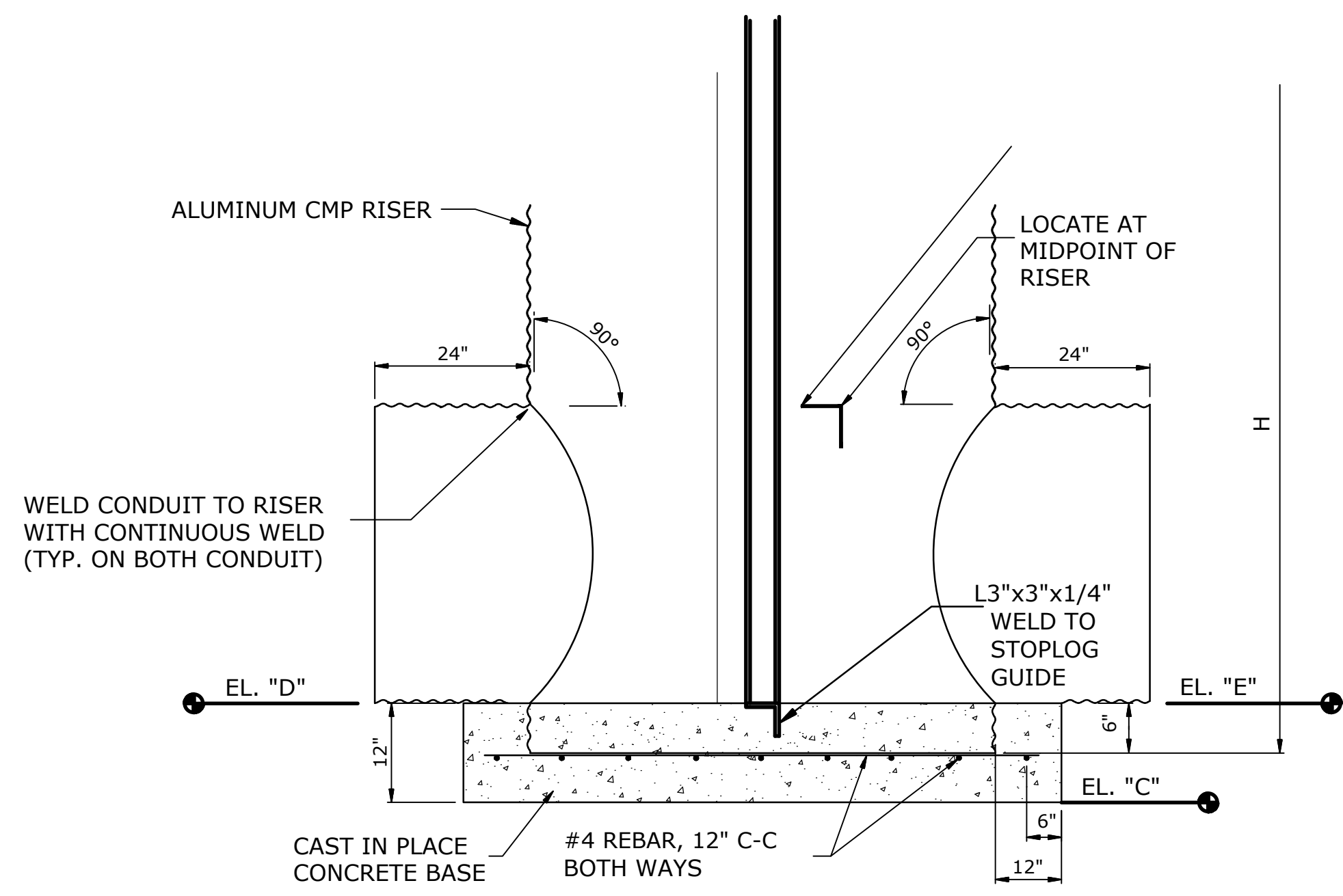
MAIN COUNTY TILE PLAN & PROFILE
PROJECT NO. GRE853235C
GREENE COUNTY
IOWA

Revisions	Date	By
IDEALS REVIEW REVISIONS	10-18-2022	A.S.
NRCS REVIEW REVISIONS	5-1-2023	A.S.
SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

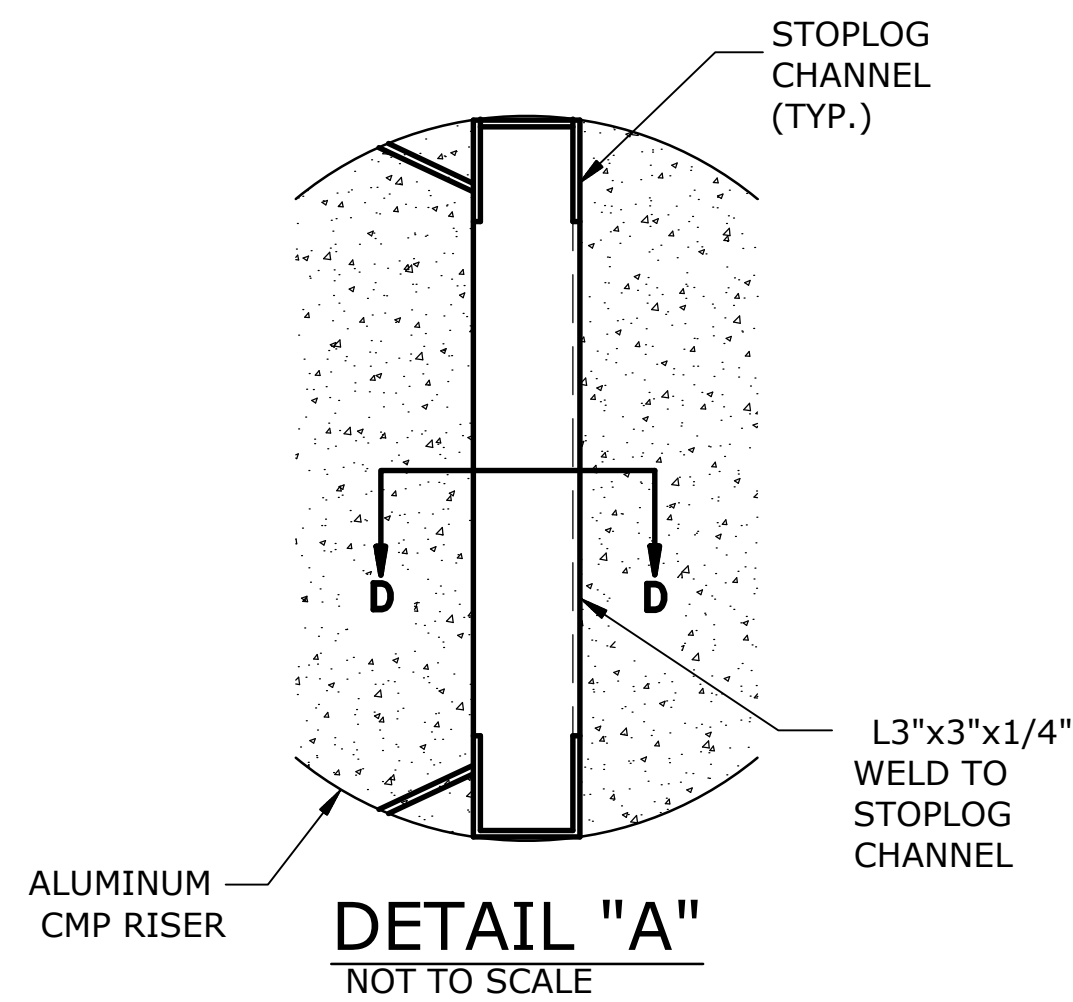
Revision	Sheet
1	1
2	2
3	3
4	4

CAD FILE: IA-340-5 C101 Site Plan
DESIGNED BY: A.S.
DRAWN BY: A.S.
SURVEYED BY: A.S. & R.V.
BIOLOGIST: M.S.

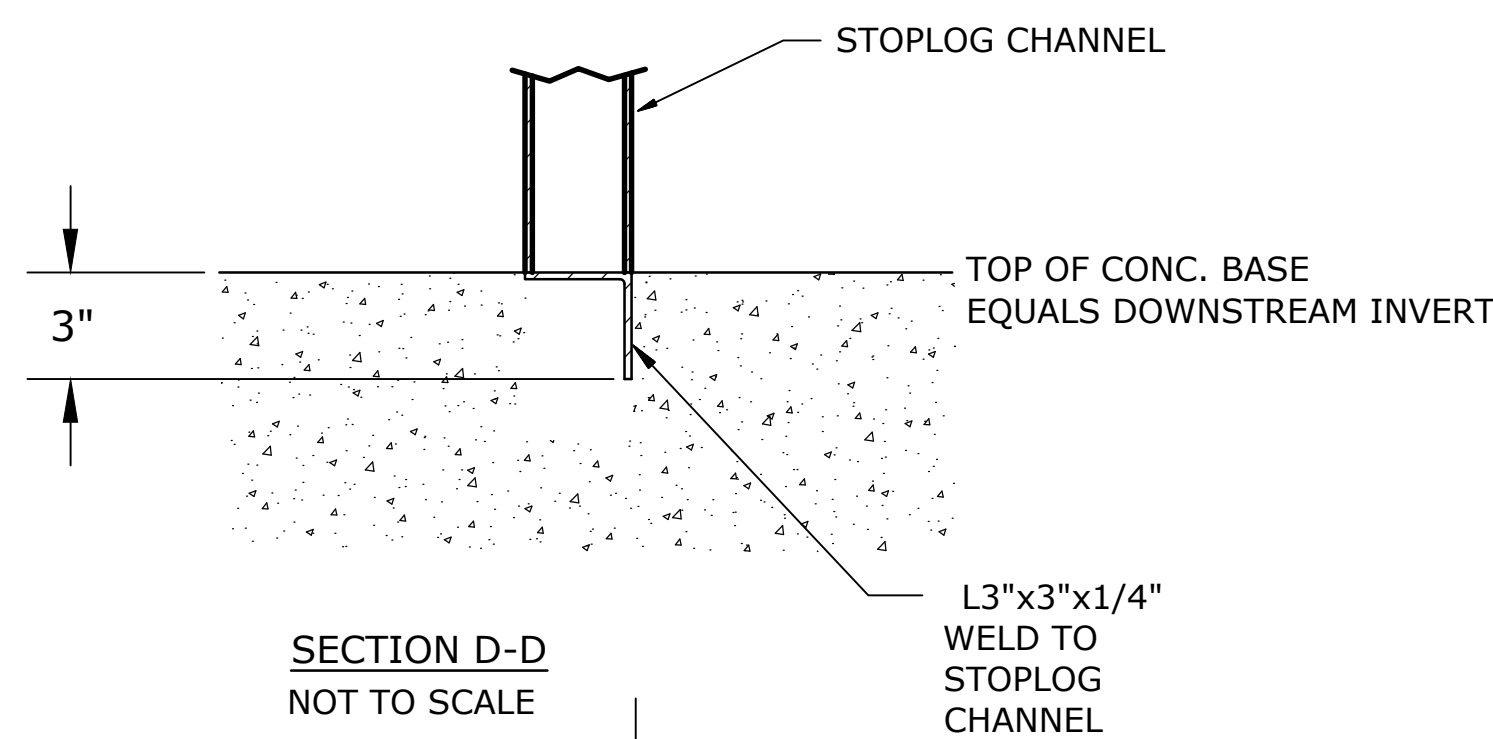
DATE: 7-14-23
PROJECT NUMBER: US-IA-340-5
C206



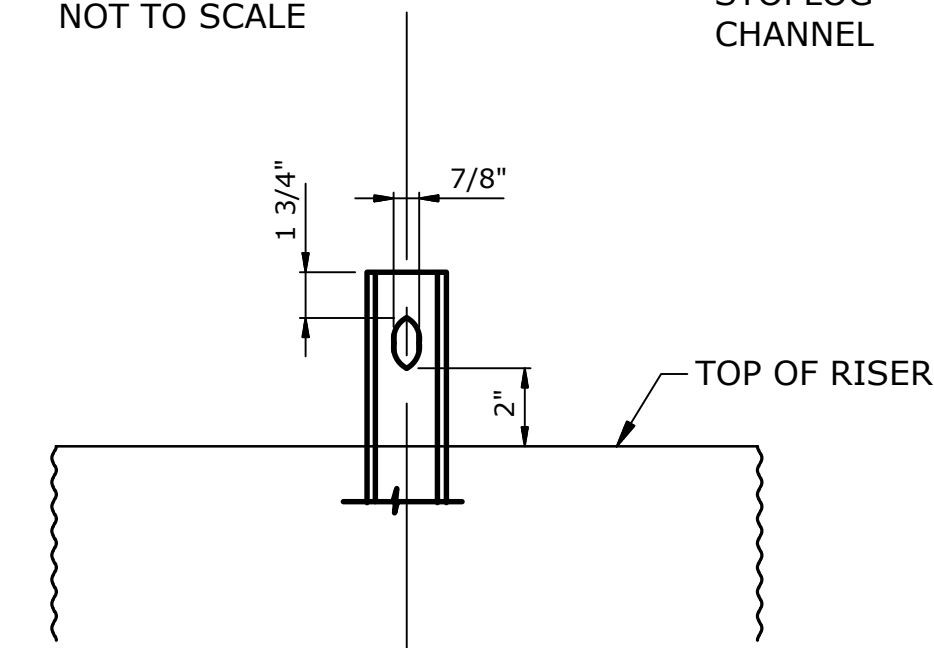
* SEE TABLE
TYP GATE CMP CONTROL STRUCTURE
NOT TO SCALE



DETAIL "A"
NOT TO SCALE



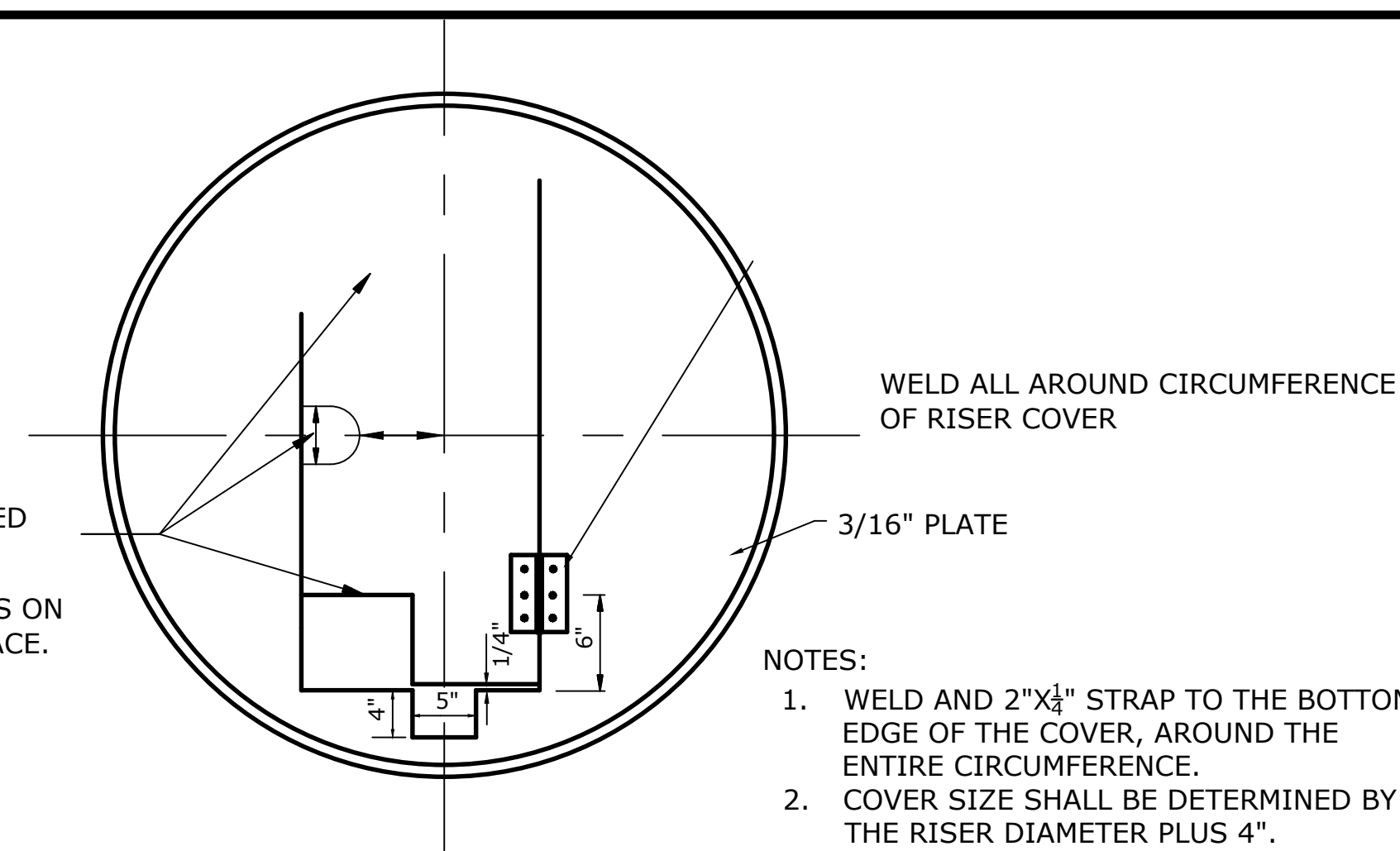
SECTION D-D
NOT TO SCALE



LOCKING ROD SLOT DETAIL
NOT TO SCALE

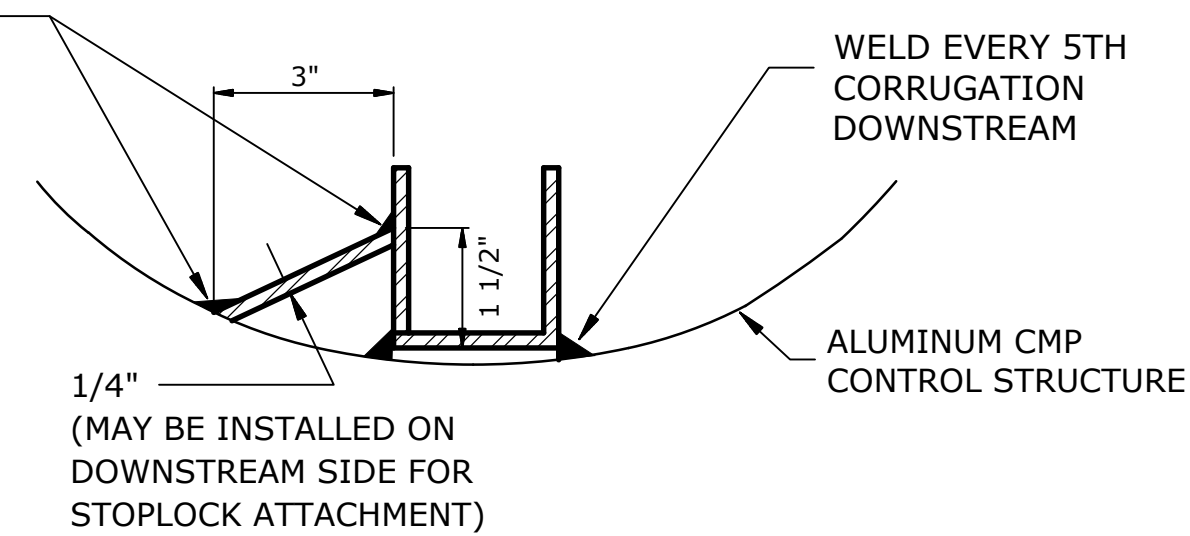
COVER SHALL BE TRIMMED TO FIT AROUND GATE APPURTENANCES SO THE NON-HINGED SIDE RESTS ON L 3"x 3"x 1/4" RISER BRACE.

GATE RISER COVER DETAIL
NOT TO SCALE

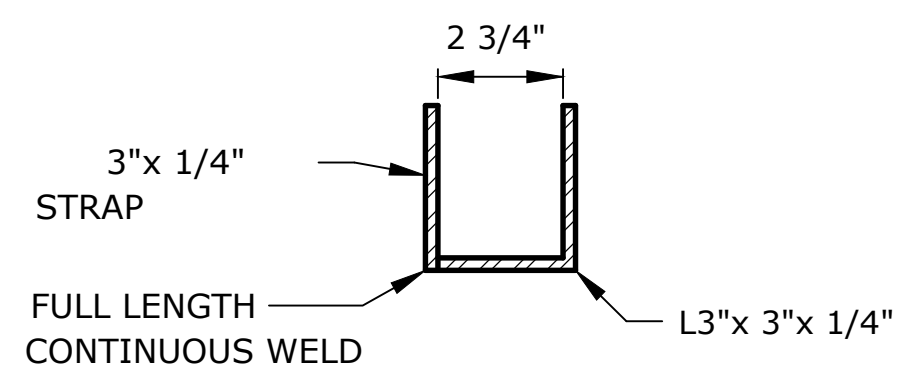


- NOTES:
1. WELD AND 2"x3/4" STRAP TO THE BOTTOM EDGE OF THE COVER, AROUND THE ENTIRE CIRCUMFERENCE.
 2. COVER SIZE SHALL BE DETERMINED BY THE RISER DIAMETER PLUS 4".
 3. HINGED DOOR LENGTH SHALL BE DETERMINED BY THE RISER DIAMETER MINUS 5" EITHER SIDE OF RISER.

CONTINUOUS FILLET BETWEEN CORRUGATED ALUM. CONTROL STRUCTURE & STOPLOG GUIDE UPSTREAM

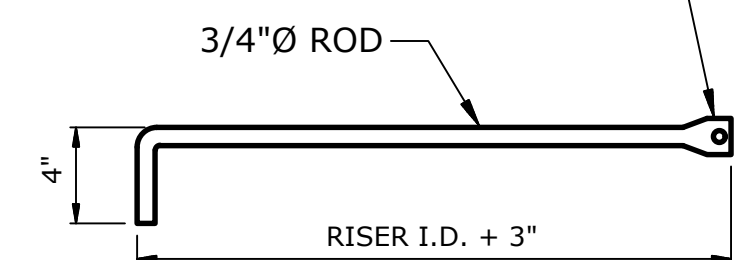


STOPLOG GUIDE DETAIL
NOT TO SCALE

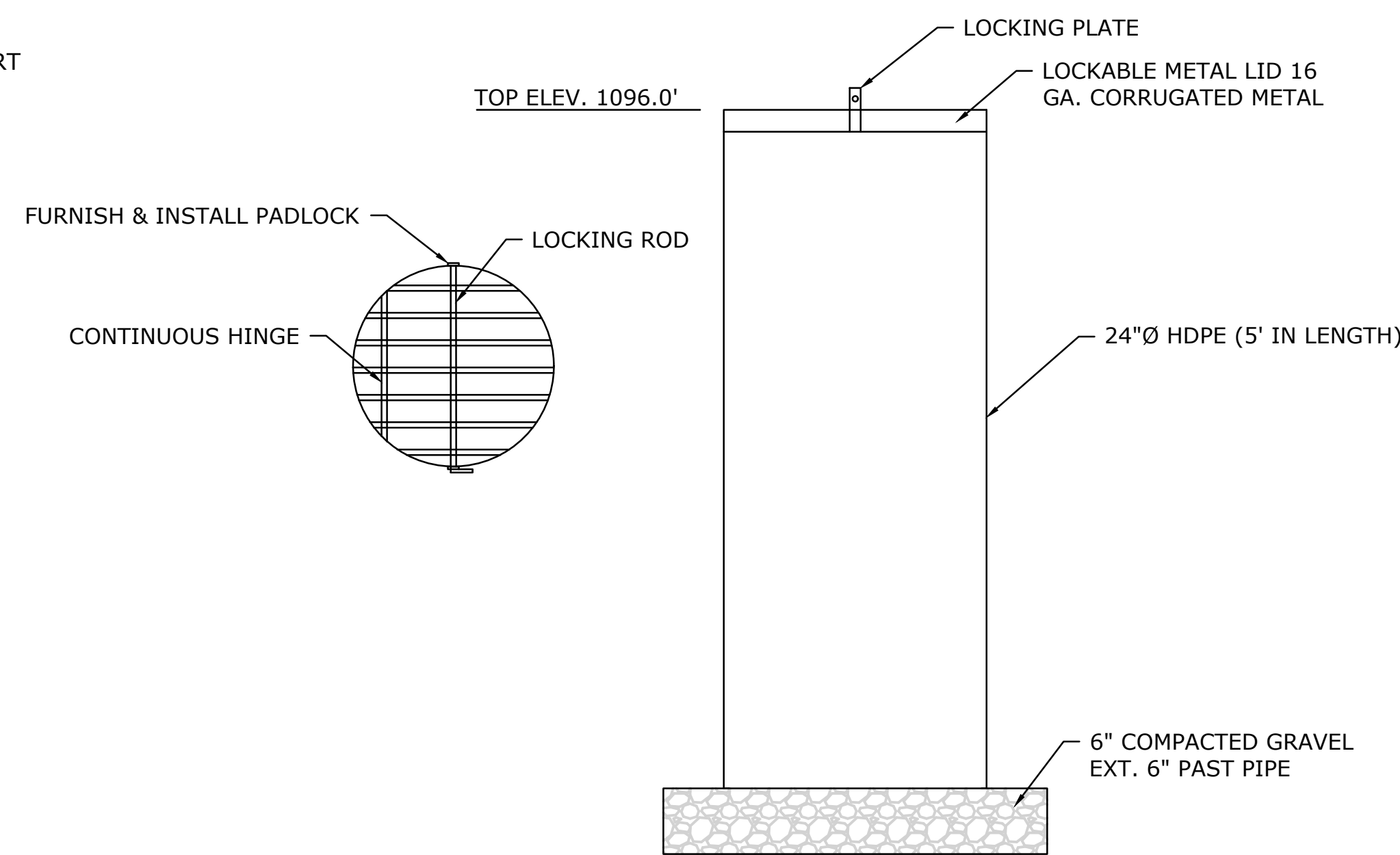


STOPLOG CHANNEL DETAIL
NOT TO SCALE

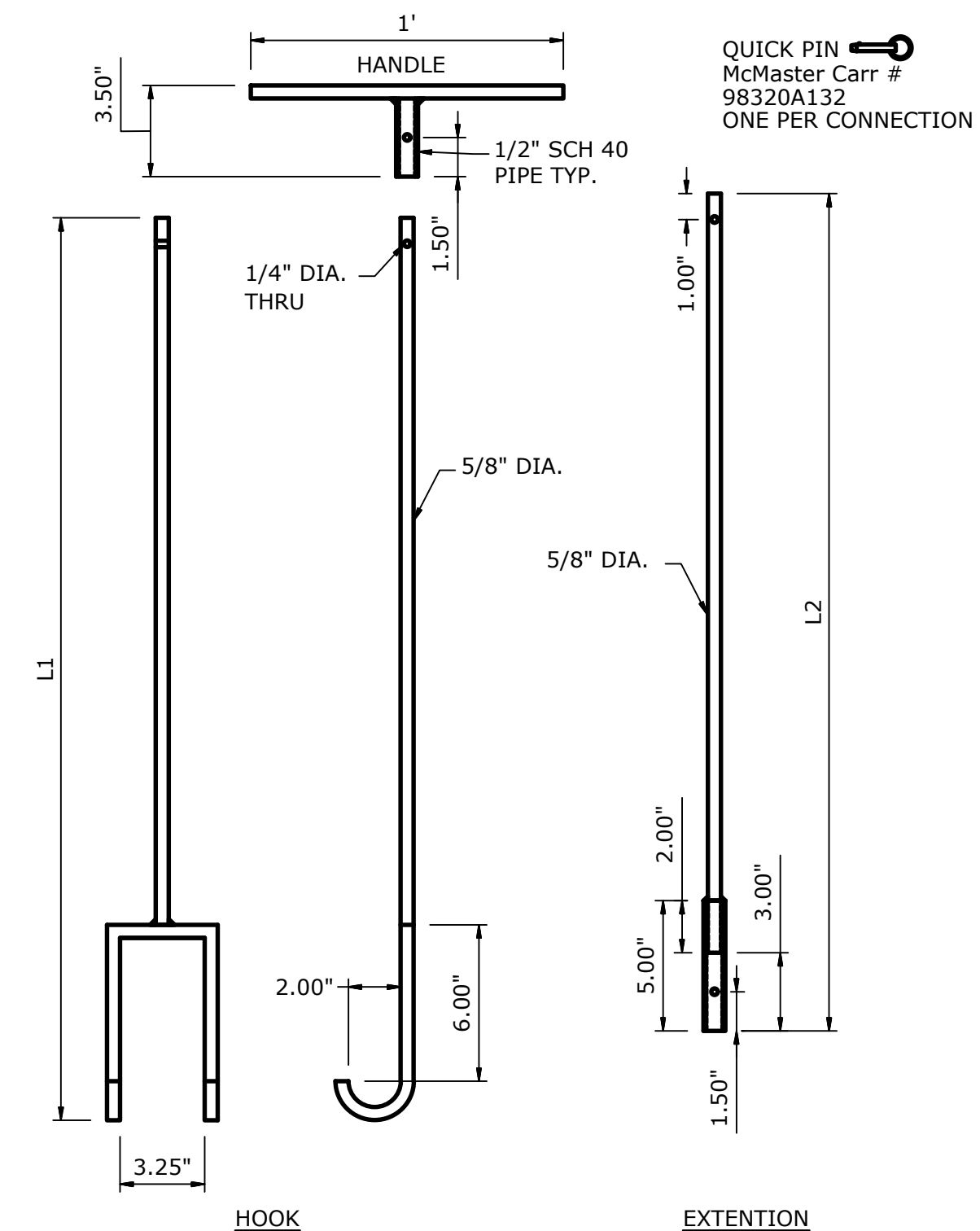
FLATTEN END OF ROD TO APPROX. 3/8"x 1 1/2" & DRILL 1/2"Ø HOLE CENTERED 1" FROM END OF ROD.



LOCKING ROD DETAIL
NOT TO SCALE



STOPLOG STORAGE BOX DETAIL
NOT TO SCALE



STOPLOG LIFTING HOOK DETAIL
NOT TO SCALE

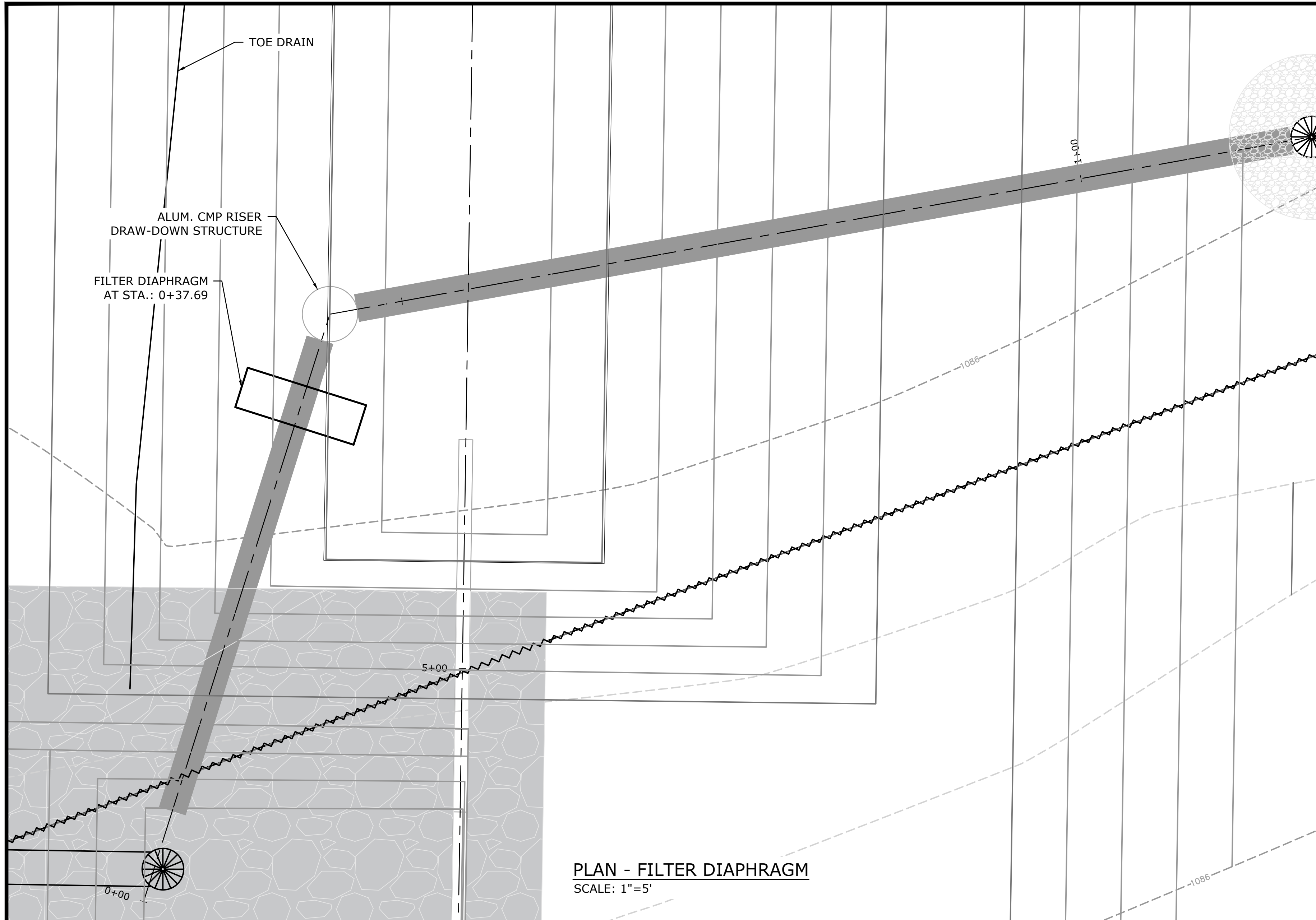
NOTE: L1 AND L2 EQUAL HEIGHT OF RISER PLUS 1'
MAX LENGTH FOR EACH 5'. AFTER ADD A SECOND EXTENSION L3
2 PER STRUCTURE



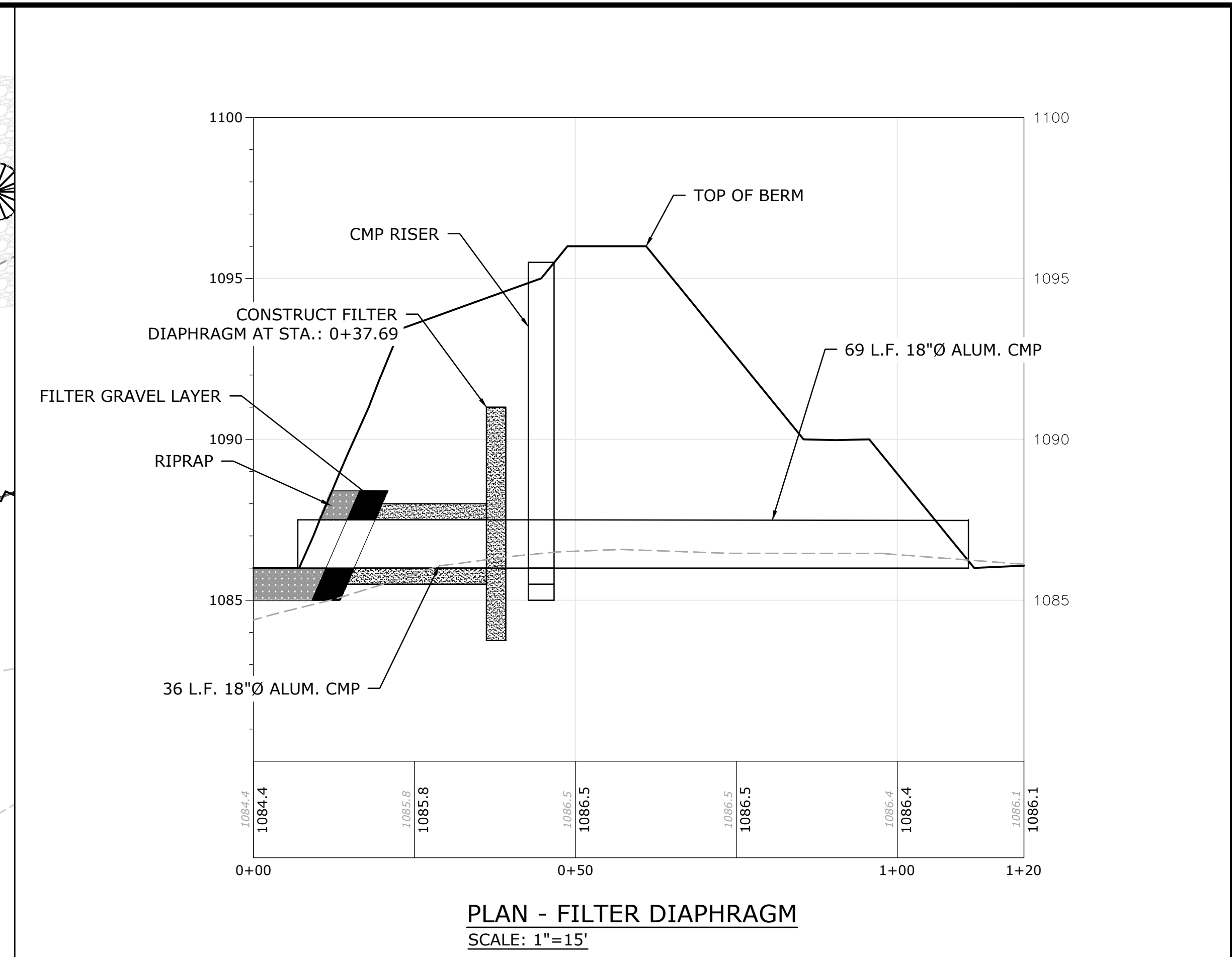
Revision	Sheet	Revisions	Date	By
1		ITDALS REVIEW REVISIONS	10-18-2022	A.S.
2		INRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

CAD FILE:
IA-340-5 C101 Site Plan
DESIGNED BY: A.S.
DRAWN BY: A.S.
SURVEYED BY: A.S. & R.V.
BIOLOGIST: M.S.
DATE:
7-14-23
PROJECT NUMBER:
US-IA-340-5

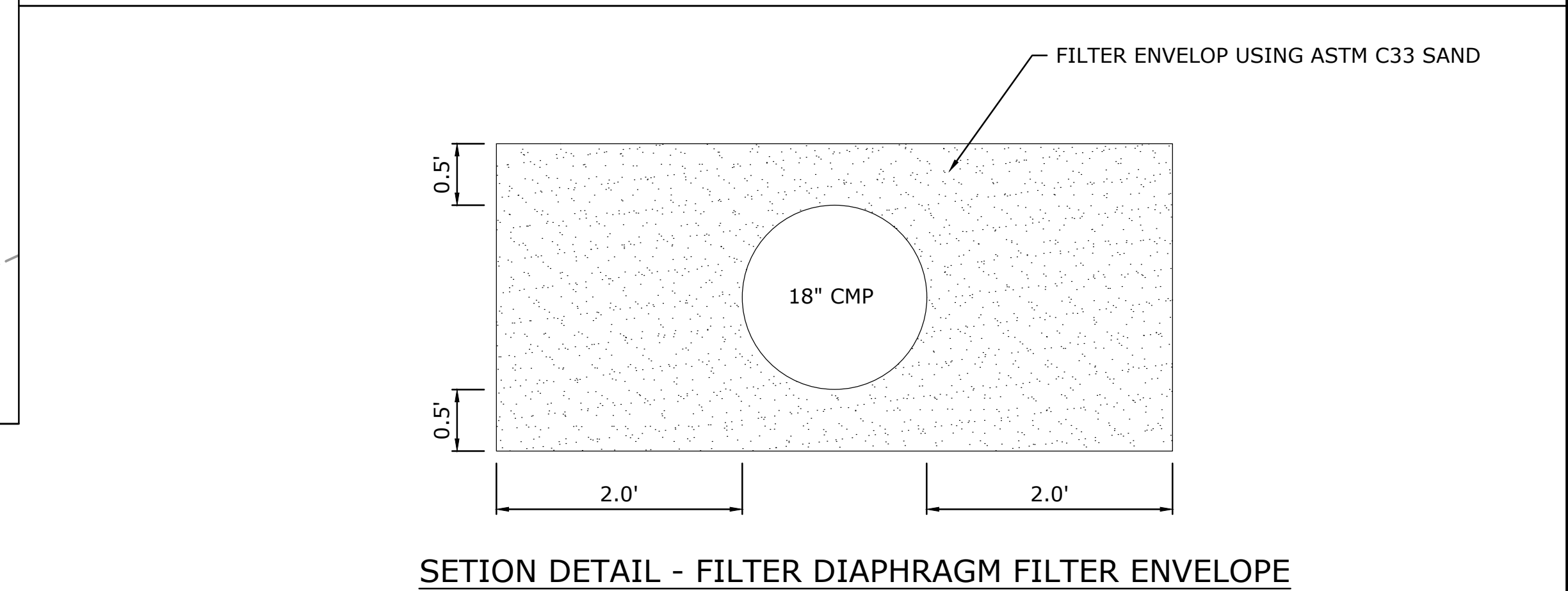
C:\Users\schippers\Documents\Iowa - Documents\Iowa\02_C3D Projects\IA-340-5_C101_Site Plan.dwg, 7/17/2023 10:47 AM, Andrew Schippers, Filter Diaphragm, None



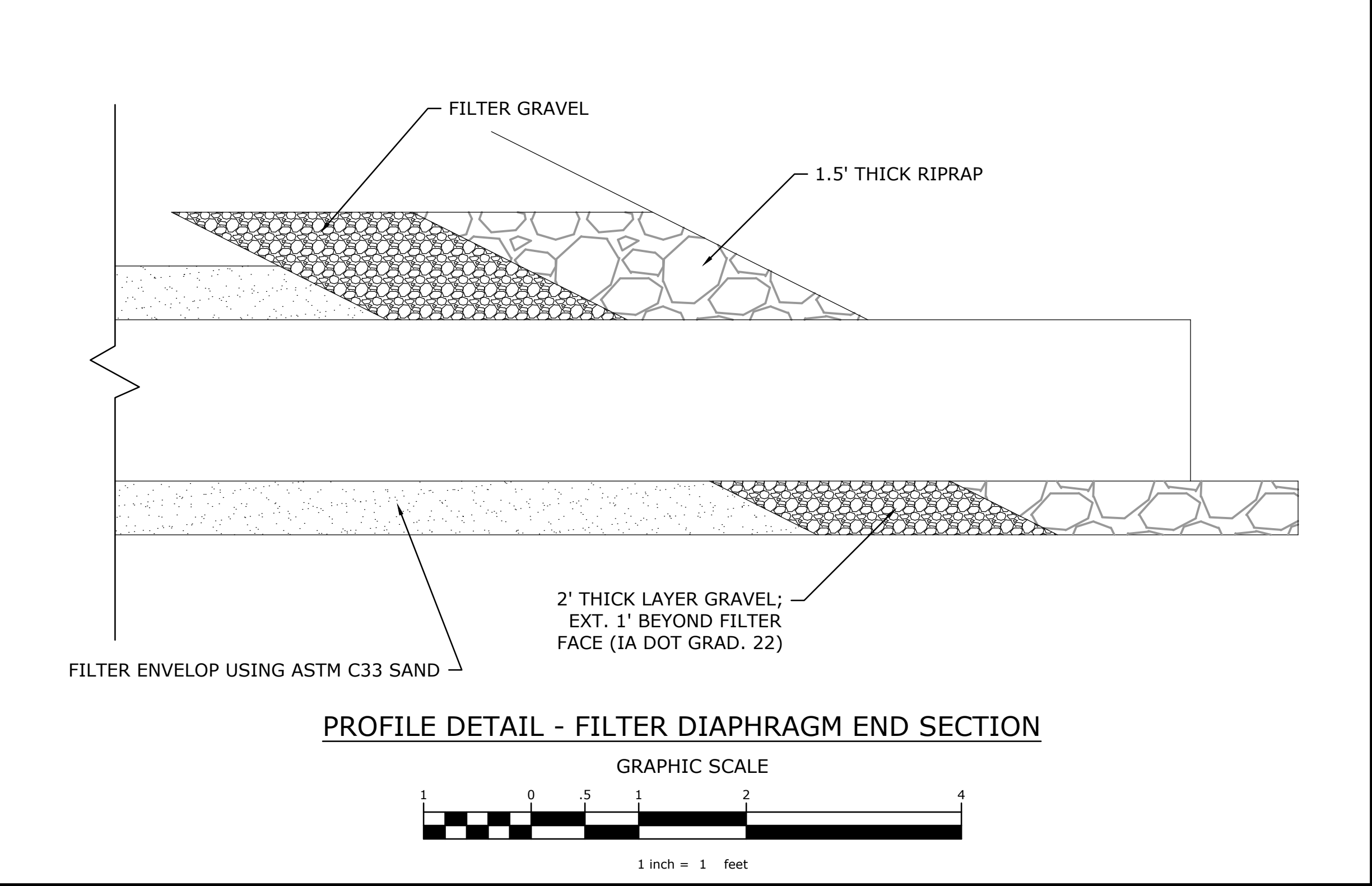
PLAN - FILTER DIAPHRAGM
SCALE: 1"=5'



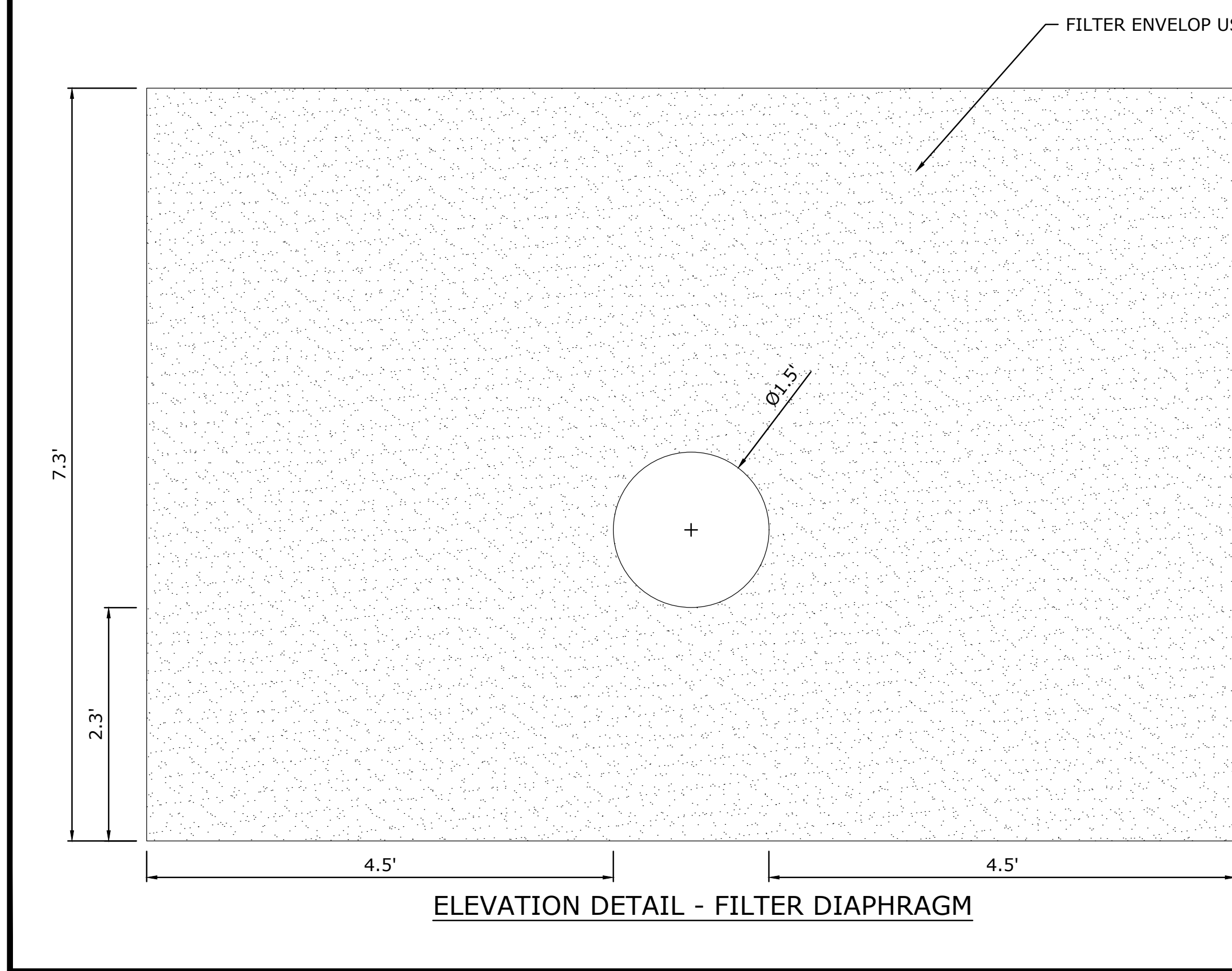
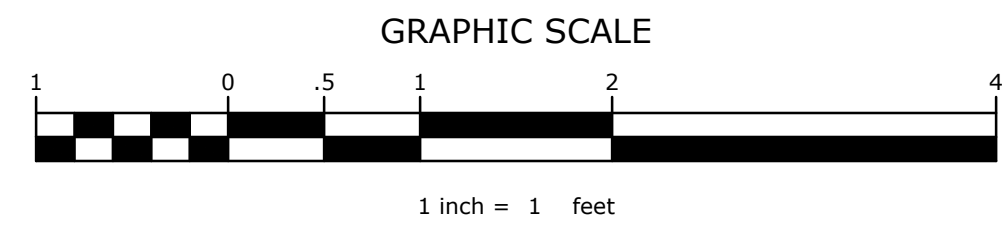
PLAN - FILTER DIAPHRAGM
SCALE: 1"=15'



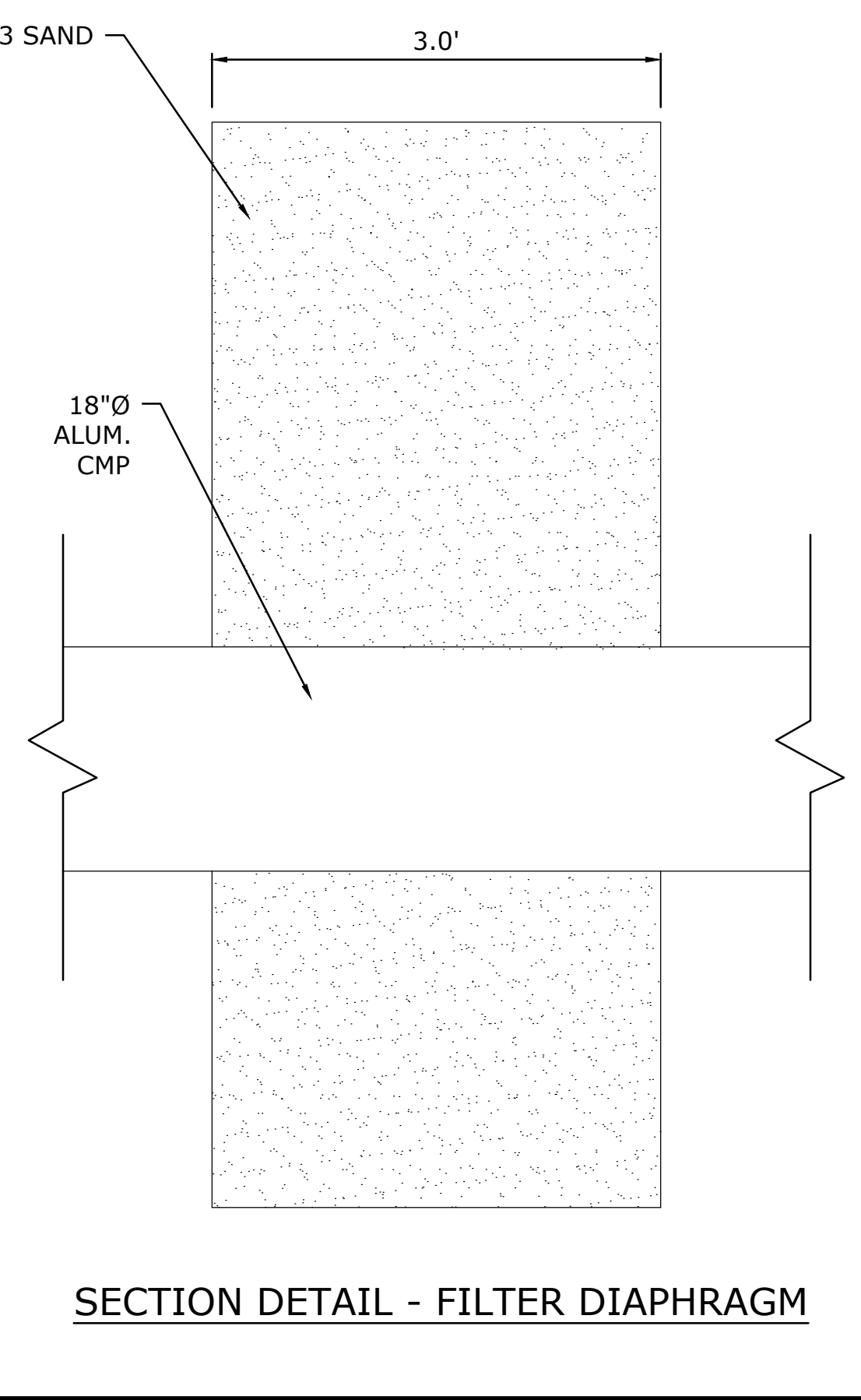
SECTION DETAIL - FILTER DIAPHRAGM FILTER ENVELOPE



PROFILE DETAIL - FILTER DIAPHRAGM END SECTION



ELEVATION DETAIL - FILTER DIAPHRAGM





SECTION DETAIL - FILTER DIAPHRAGM

Revision	Sheet	Revisions	Date	By
1		10% REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

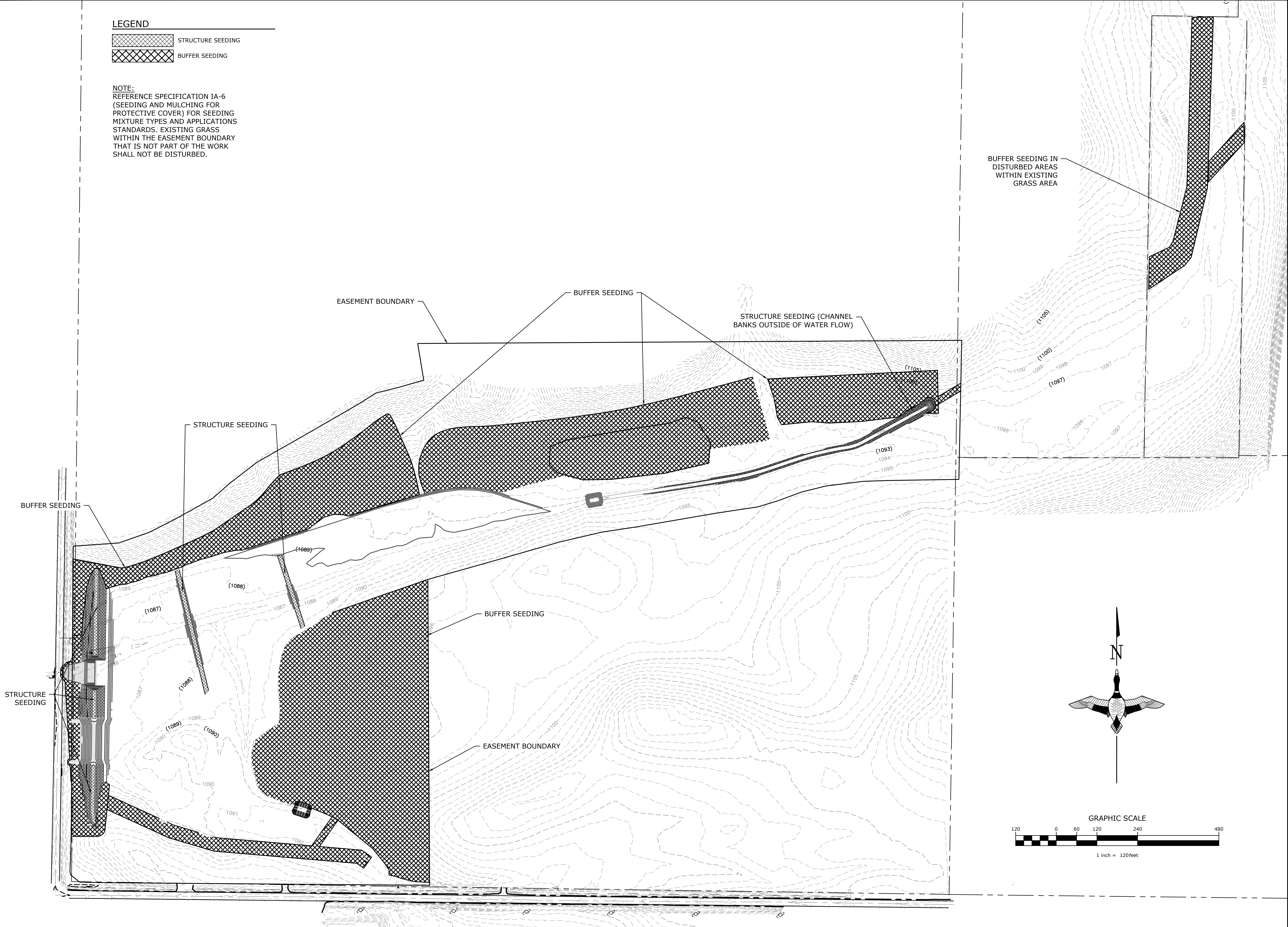
CAD FILE:
IA-340-5 C101 Site Plan
DESIGNED BY: A.S.
DRAWN BY: A.S.
SURVEYED BY: A.S. & R.V.
BIOLOGIST: M.S.

DATE:
7-14-23
PROJECT NUMBER:
US-IA-340-5
C305

LEGEND

-  STRUCTURE SEEDING
-  BUFFER SEEDING

NOTE:
 REFERENCE SPECIFICATION IA-6
 (SEEDING AND MULCHING FOR
 PROTECTIVE COVER) FOR SEEDING
 MIXTURE TYPES AND APPLICATIONS
 STANDARDS. EXISTING GRASS
 WITHIN THE EASEMENT BOUNDARY
 THAT IS NOT PART OF THE WORK
 SHALL NOT BE DISTURBED.



BUFFER SEEDING IN
 DISTURBED AREAS
 WITHIN EXISTING
 GRASS AREA

GREAT LAKES/ATLANTIC REGIONAL OFFICE
 7322 NEWMAN BOULEVARD, BUILDING 1
 DEXTER, MICHIGAN 48130
 (734) 623-2000 www.ducks.org

SEEDING PLAN
PROJECT NO. GRE853235C
GREENE COUNTY
IOWA

Revision	Sheet	Revisions	Date	By
1		IDEALS REVIEW REVISIONS	10-18-2022	A.S.
2		NRCS REVIEW REVISIONS	5-1-2023	A.S.
3		SHEET PILE & SEEDING REVISIONS	5-31-2023	A.S.
4		BERM & SHEET PILE REVISIONS	7-14-2023	A.S.

CAD FILE:
 IA-340-5 C101 Site Plan
 DESIGNED BY: A.S.
 DRAWN BY: A.S.
 SURVEYED BY: A.S. & R.V.
 BIOLOGIST: M.S.
 DATE:
 7-14-23
 PROJECT NUMBER:
 US-IA-340-5
 C401

C:\Users\schippers\Documents\Iowa - Documents\Iowa\02_CSD Projects\IA-340-5 CREP PROJECTS\GREENE WALLACE\CSD_DRAWING\IA-340-5 C101_Site Plan.dwg, 7/14/2023 2:53 PM, Andrew Schippers, Seeding Plan, Note